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ON

DISEASES

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ON

DISEASES

OF THE

RECTUM AND ANUS

INCLUDING A PORTION OF THE

Jacksonian Prize Essay on Cancer

BY

HARRISON CRIPPS, F.R.C.S.

ASSISTANT-SURGEON ST. BARTHOLOMEW'S HOSPITAL; JACKSONIAN PRIZE ESSAYIST, ROYAL COLLEGE OF SURGEONS, 1876; LATE SURGEON GREAT NORTHERN HOSPITAL; ASSISTANT-SURGEON ROYAL FREE HOSPITAL; FORMERLY SURGICAL REGISTRAR AND ASSISTANT DEMONSTRATOR ANATOMY, ST. BARTHOLOMEW'S HOSPITAL

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PREFACE.

WHILST writing for the Jacksonian Prize Essay, in 1875, on Cancer of the Rectum, I was impressed with the difficulty of studying an isolated disease, apart from the other disorders incidental to the same locality. I have, therefore, been in the habit of taking notes in all cases of rectal disorder coming under my observation, and these are embodied in the present volume.

Much has been said as to the value of special Hospitals for the investigation of particular diseases, but I would venture to suggest that, at such a Hospital as St. Bartholomew's, with 150,000 patients passing yearly under observation, opportunities are afforded for research unrivalled by any special institution.

It will be found that the clinical cases recorded in this volume are largely drawn from notes made by me in the Hospital Registers, and that the pathological observations have for the most part been verified by post-mortem or microscopic investigation.

I am greatly indebted to my Hospital colleagues for the facilities they have afforded me for examining cases under their care, while I have to thank Sir James Paget, Mr. Doran, and other friends, for many opportunities for observing cases of rectal cancer.

2, Stratford Place,
Oxford Street, W.
1884.

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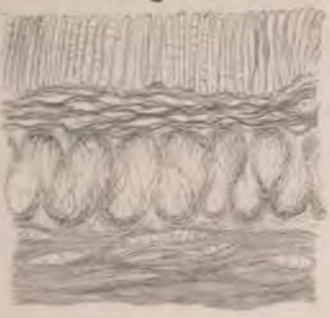
PLATE I.

Fig. 1.



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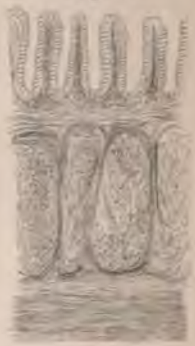

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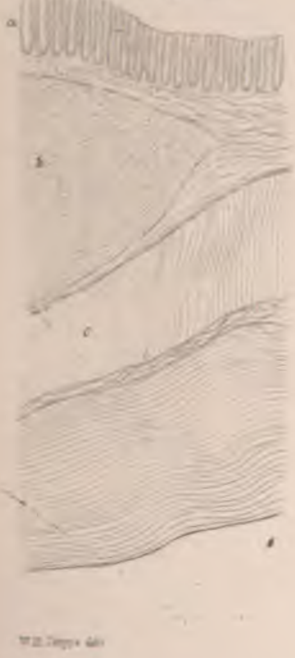

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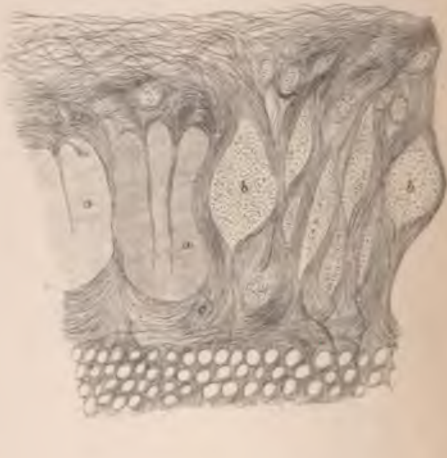


W.H. Deppe del.

Mintern Bros. lith.

DESCRIPTION OF PLATE I.

FIG. 1.—A vertical section of the rectal wall of a rabbit.

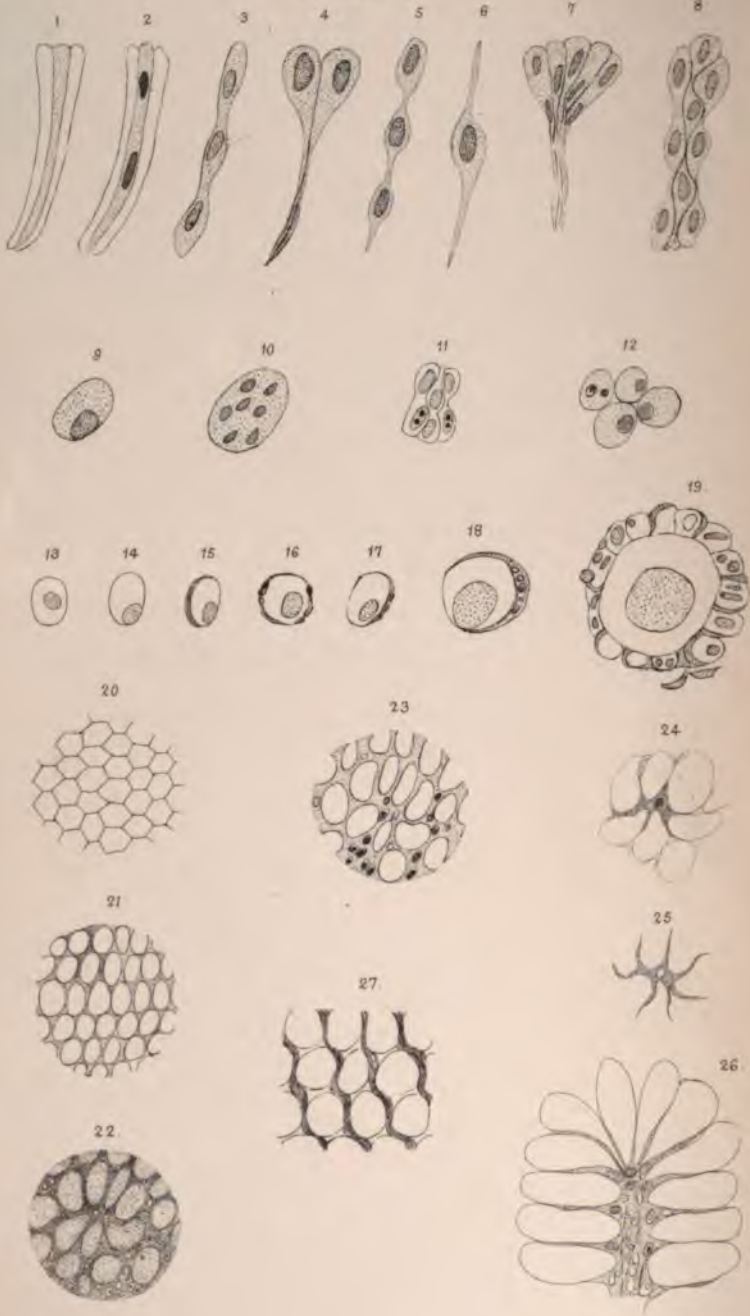
FIG. 2.—A section of a healthy human rectal wall.

FIG. 3.—Adenoid growth (*b*) extending between the muscular (*c*) and mucous coats (*a*).

FIG. 4.—A vertical section of the muscular coat of the rectum. The morbid adenoid growth (*bb*) is seen taking the place of the muscular fibres (*a*, *a*), while the inter-muscular fibrous bands are greatly thickened. (*See* page 324.)

DRAWN BY HARRISON CRIPPS.

PLATE II.



W.H.Cripps del^t

Mintern Bro^s sc.

DESCRIPTION OF PLATE II.

FIGS. 1 to 8 represent cells from the surface of adenoid tumours. (*See* page 340.)

FIGS. 9 to 19 represent cells from deeper portions of the growth.

FIGS. 20 to 22 represent horizontal sections of epithelial cells.

FIGS. 24 and 25 illustrate the delusive appearance of so-called stellate cells. (*See* page 338.)

FIGS. 26 and 27 illustrate the formation of fibrous tissue from cell walls.

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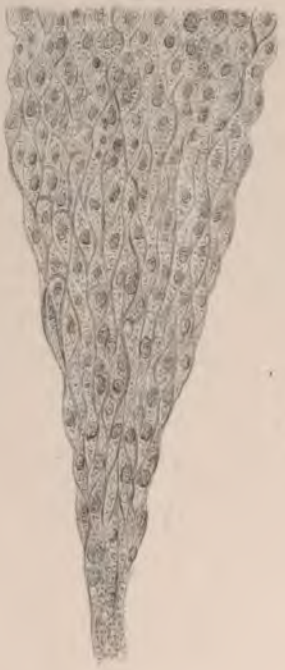
PLATE III.

Fig. 1.



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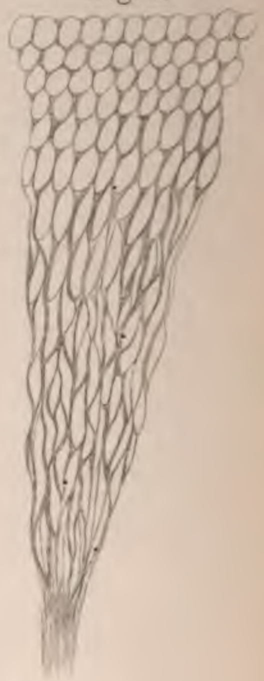

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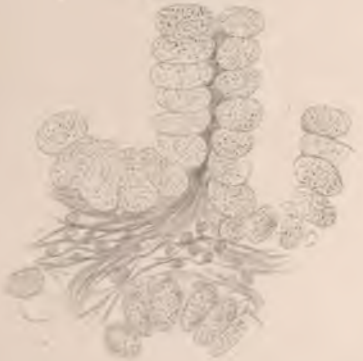

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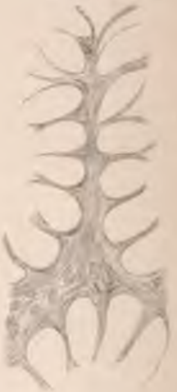

W.K. Griggs del.

Mintern Bros sc.

DESCRIPTION OF PLATE III.

FIG. 1 represents retiform tissue converging into fibrous band.

FIG. 2 is a similar section, the cellular contents having been washed out.

FIG. 3 represents a section of cells in their long diameter, showing their connection with the intercellular tissue.

FIG. 4, a similar specimen, the fluid contents having fallen out.

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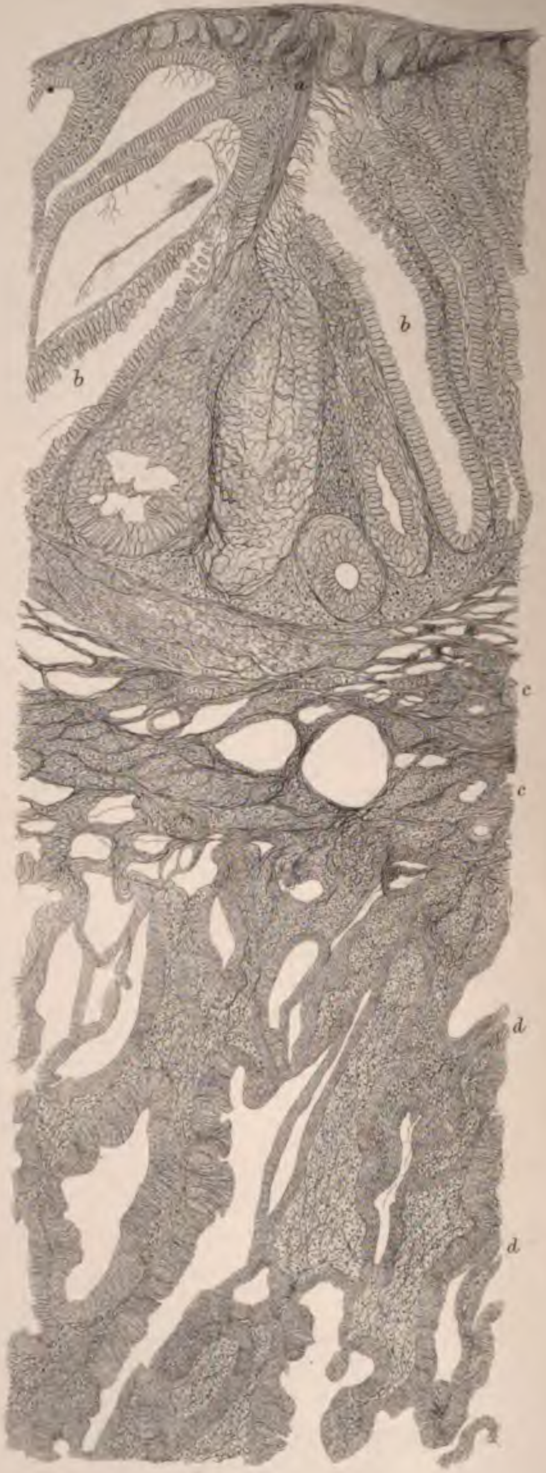
PLATE. IV



H. Cripps del.

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DESCRIPTION OF PLATE IV.

A section of adenoid growth, extending along the submucous tissue, between the mucous membrane and the muscular coat. The section is cut at right angles to the surface of the bowel.

a. Gelatinous material of doubtful nature (mucus ?) covering the free surface of the bowel.

b. Greatly hypertrophied Lieberkühn's follicles.

c. Upper part of submucous coat, crowded with leucocytes.

d. New growth of morbid adenoid tissue. (Hartnack, obj. 4.)

DRAWN BY B. HARRISON CRIPPS.

PLATE V

Fig 1.

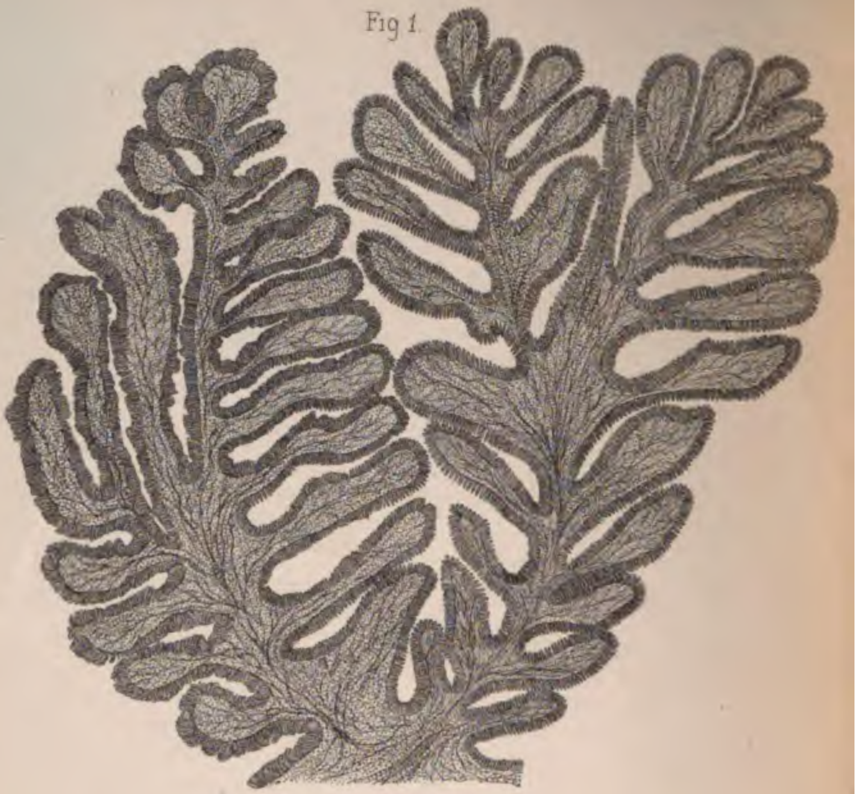
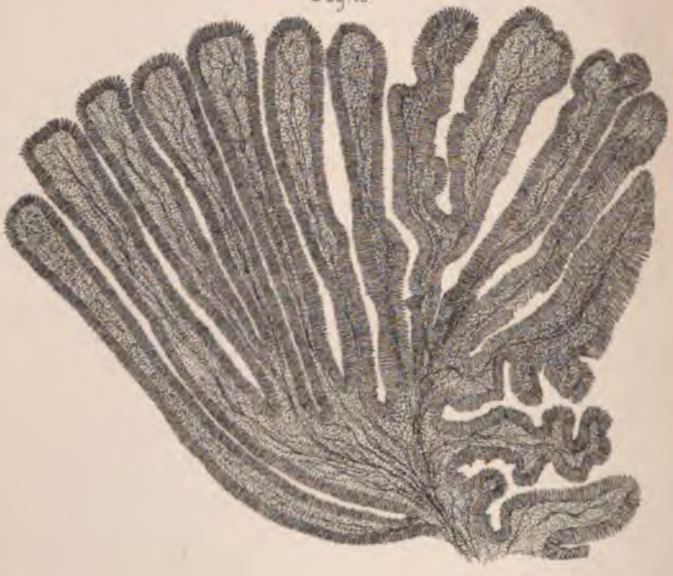


Fig. 2.



B H Cripps delt.

Mintern Bros sc.

DESCRIPTION OF PLATE V.

FIG. 1.—Section from surface of innocent adenoid growth (polypus).

FIG. 2.—Section from surface of a growth in a case of multiple polypi.

In these sections a single layer of columnar epithelium forms the free surface. The fibrous tissue forms a central stalk from which fibres radiate, and expanding into a delicate retiform tissue, form the framework for supporting the epithelium.

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PLATE VI.

Fig. 1

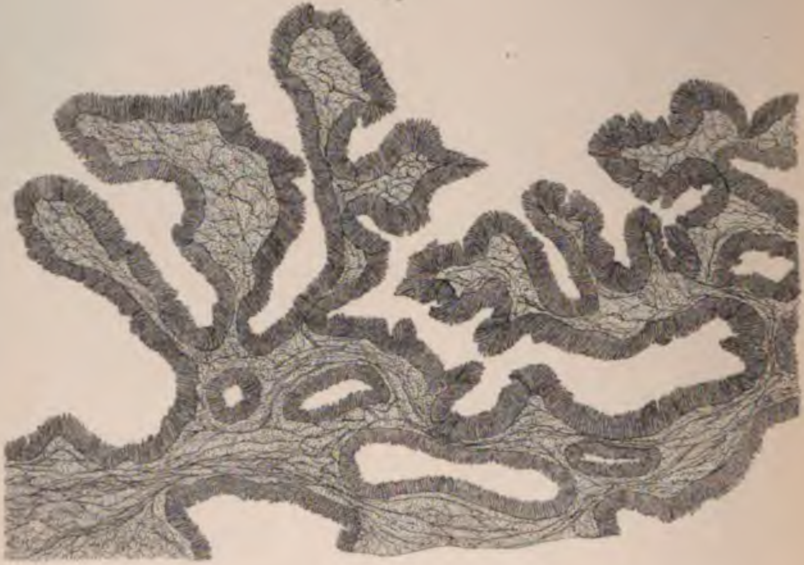
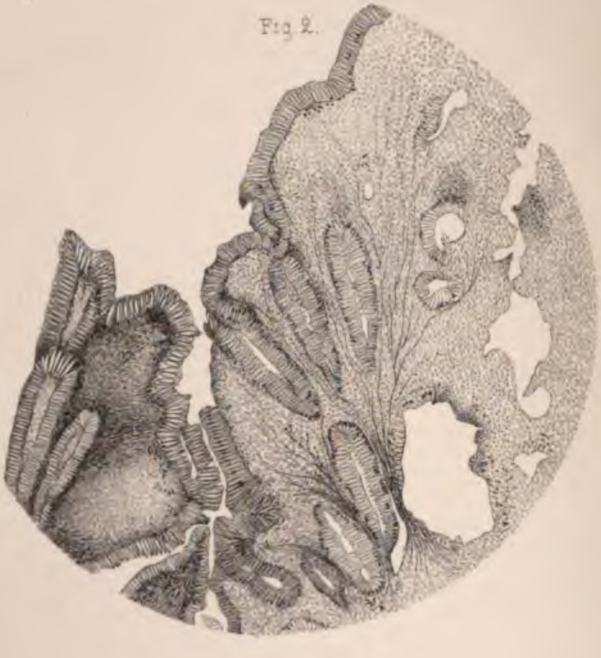


Fig. 2.



ngs. del. Mintern Bros. sc.

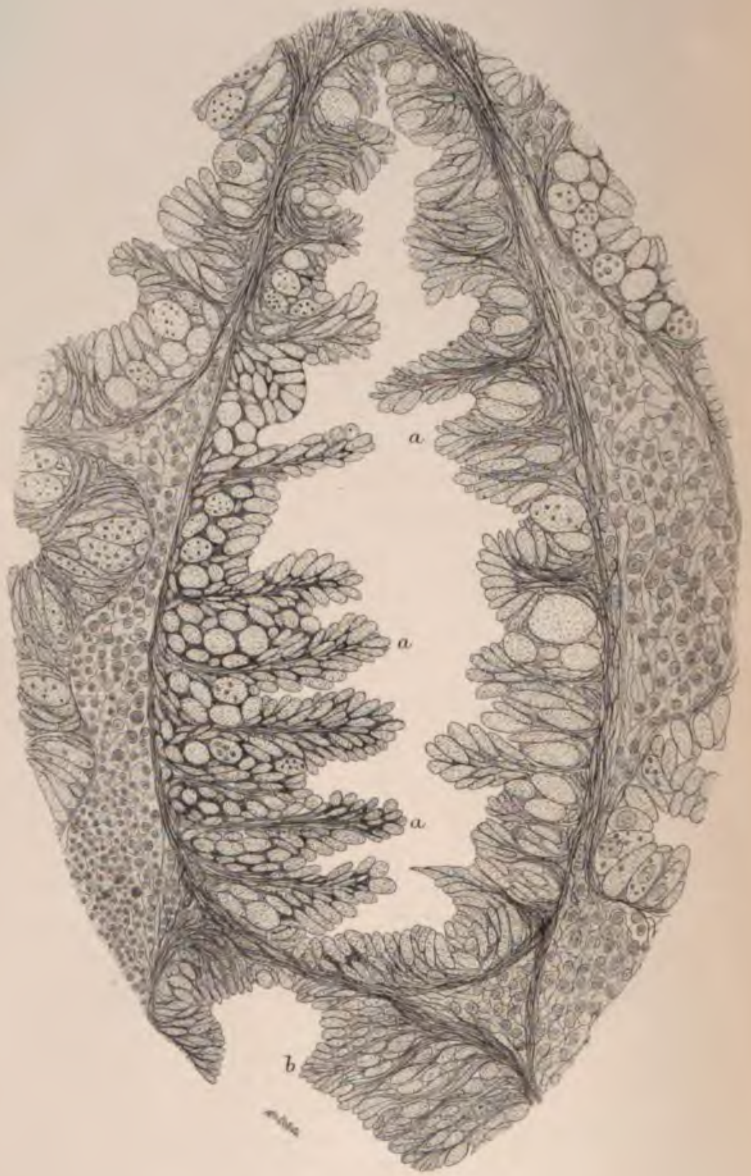
DESCRIPTION OF PLATE VI.

FIG. 1. represents a section of adenoid growth cut at right angles to the surface, and shows how the epithelium lining the cavities in the deeper part of the tumour is in reality but an invagination of that from the surface. (*See* page 333.)

FIG. 2.—Portion of surface of a malignant adenoid growth.

DRAWN BY B. HARRISON CRIPPS.

PLATE. VII.



H.H. Cripps del.

Mintern Bros sc

DESCRIPTION OF PLATE VII.

Section of a follicle in an adenoid growth. The cavity is becoming filled by secondary growths (*a*, *a*, *a*) from the lining walls.

As the young cells are formed at the summit of a bud, they gradually elongate, and bend over at right angles to its axis.

In the lower portion of the section at *b* the formation of fibrous tissue from the epithelial cells can be traced. (Hartnack, obj. 7.)

Drawn by Harrison Cripps.

PLATE VIII.

Fig. 1

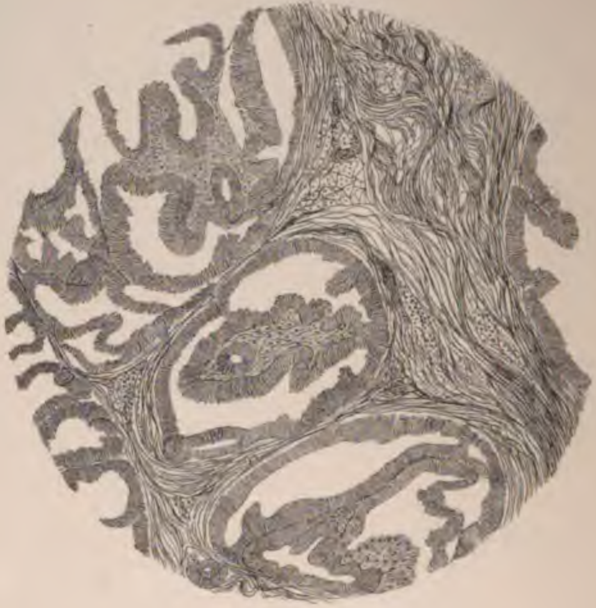
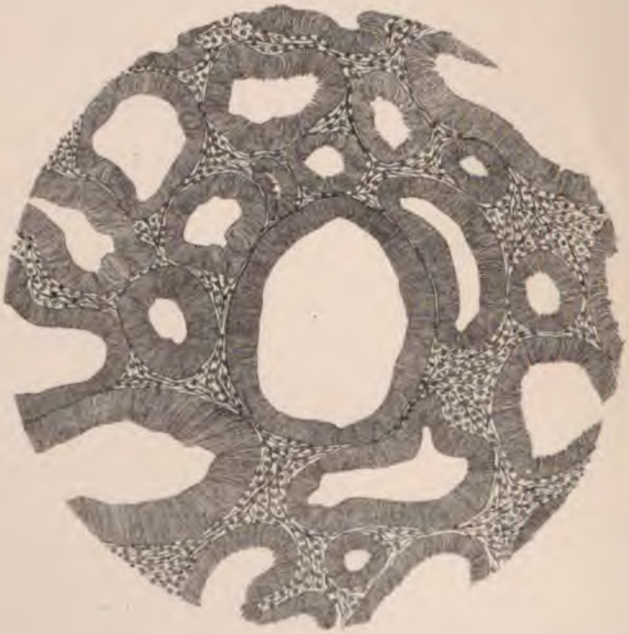


Fig. 2



D. B. Cripps delt.

Mintern Bros sc.

DESCRIPTION OF PLATE VIII.

Fig. 1.—Section of slow-growing adenoid rectal tumour (malignant) extending along the submucous tissue.

Fig. 2.—From a very slow-growing adenoid tumour (innocent). The epithelial cells are very regular, and the intervening retiform tissue clearly marked. (Hartnack, obj. 4.)

Drawn by B. Harrison Cripps.

PLATE. IX.

Fig. 1.

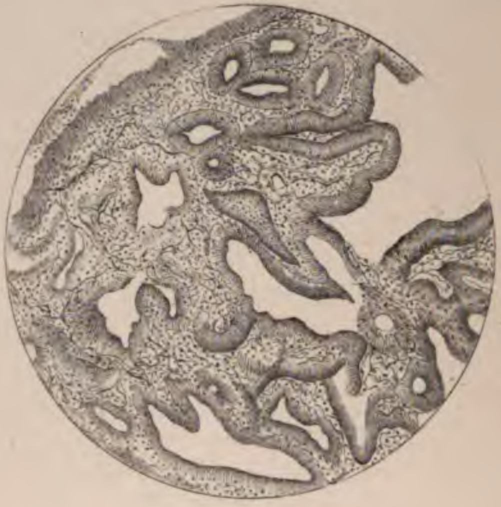
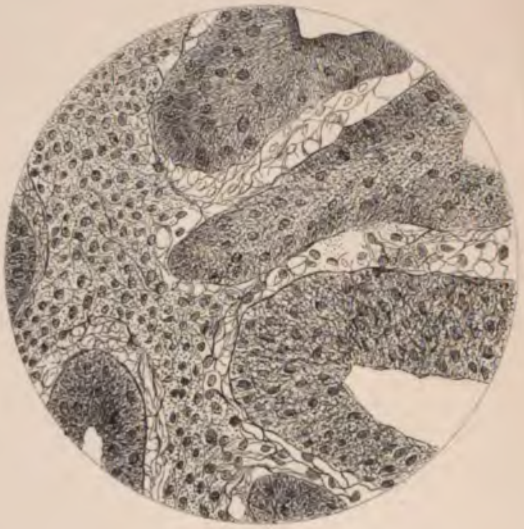


Fig. 2.



W. H. Deyps del.

Mintern Bros. sc.

DESCRIPTION OF PLATE IX.

Fig. 1.—From rapidly growing recurrent fungous mass forming a large tumour in a few weeks. It is clearly seen to be of an adenoid nature, and is formed on the same plan as the growth in Plate VIII. The cavities, however, are very irregular. The epithelial lining and the intervening retiform tissue are embryonic and ill-defined. (Hartnack, obj. 4.)

Fig. 2.—Portion of the same under a higher power. The epithelial lining is scarcely recognizable as consisting of individual cells, for it rather resembles a mass of nuclei with their long axes pointing towards the cavities. The intervening retiform structure is so ill developed as to represent little more than a spindle-celled tissue (*See* page 344.)

Drawn by Harrison Cripps.

PLATE X.

Fig. 1.

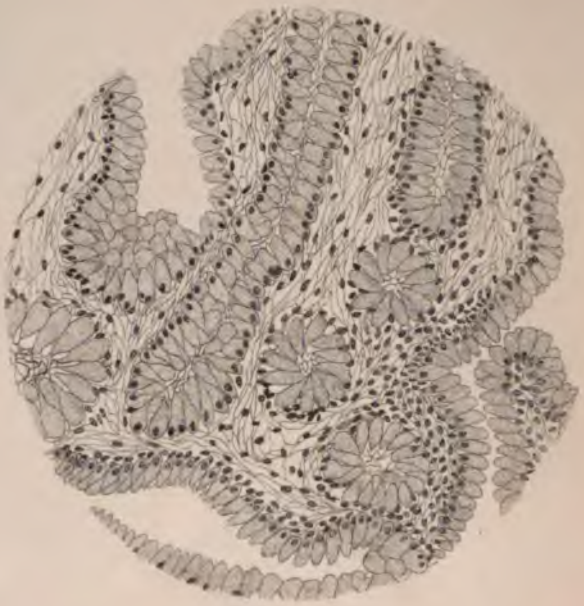
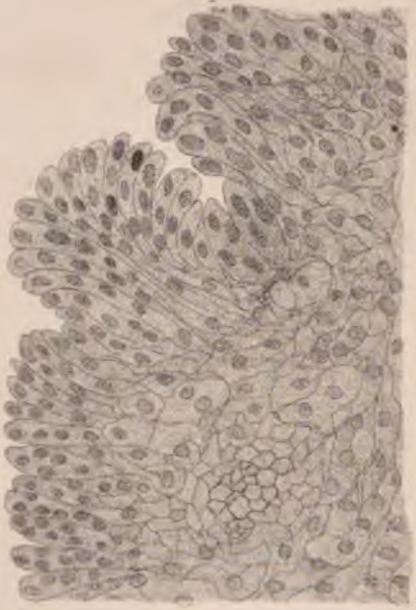


Fig. 2.



W. H. Cripps del.

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DESCRIPTION OF PLATE X.

FIG. 1.—Section near margin of growth, showing the supposed identity of the nuclei of the epithelium, with the leucocytes of the retiform tissue.

Both the nuclei and leucocytes are darkly stained. (*See* page 17.)

FIG. 2.—A section of the epithelial margin of a growing tumour showing the absence of basement membrane, and the intimate connection between the growing epithelial cells and the supporting retiform tissue. (Hartnack, obj. 7.) (*See* page 336.)

DRAWN BY B. HARRISON CRIPPS.

PLATE XI

Fig. 1.

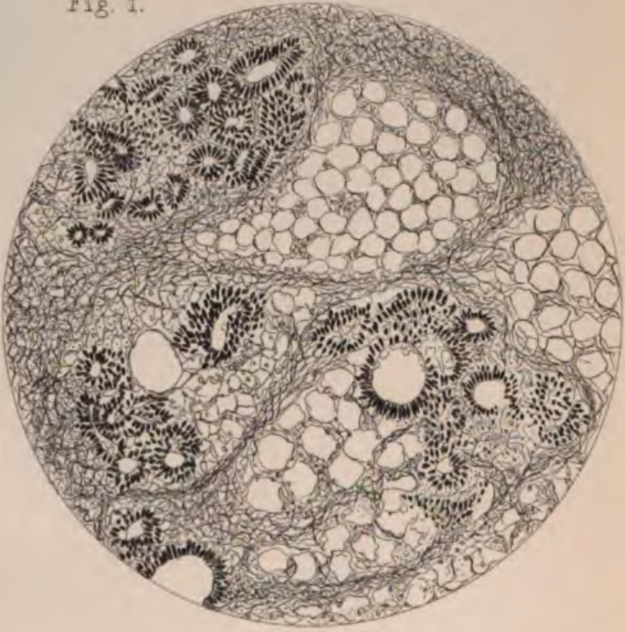
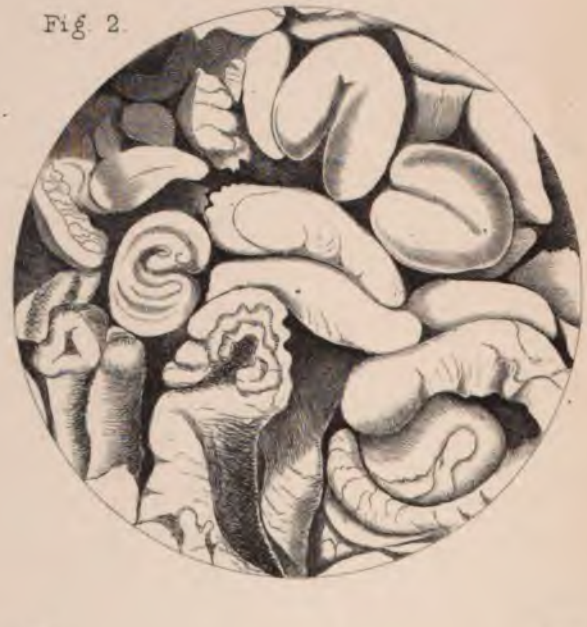


Fig. 2.



[illegible] Cripps del.

Mintern Bros. sc.

DESCRIPTION OF PLATE XI.

Fig. 1.—Section through fat, showing the infiltration of the growth between the fat-cells. (*See* page 18.)

Fig. 2.—Surface of an adenoid tumour seen through a one-inch power with a direct light. (*See* page 331.)

Drawn by Harrison Cripps.

PLATE XII.

Fig. 1.

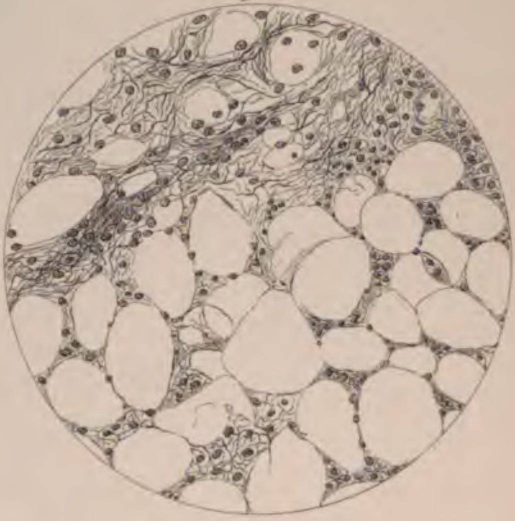
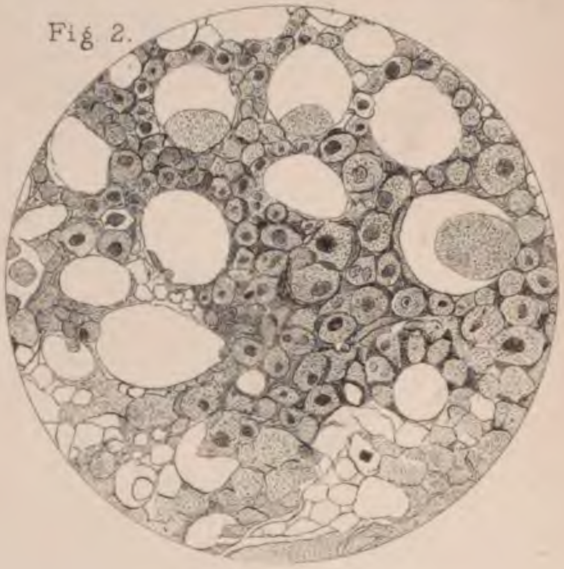


Fig. 2.



D.E. Cripps del.

Mintern Bros. lith.

DESCRIPTION OF PLATE XII.

FIG. 1.—Section of fat-cells near the margin of the tumour. Between the fat-cells can be seen an infiltration of small lymphoid cells. (*See* page 19.)

FIG. 2.—A section from the same specimen as Fig. 1, but cut from nearer the morbid growth. The lymphoid cells have acquired a distinctly epithelial character. In places the cavities of the original fat-cells remain, in others they have become obliterated. (Hartnack, obj. 9.)

DRAWN BY B. HARRISON CRIPPS.

PLATE XIII

Fig. 1.

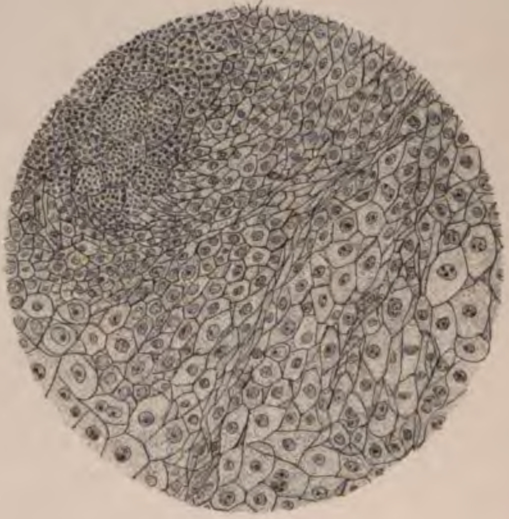
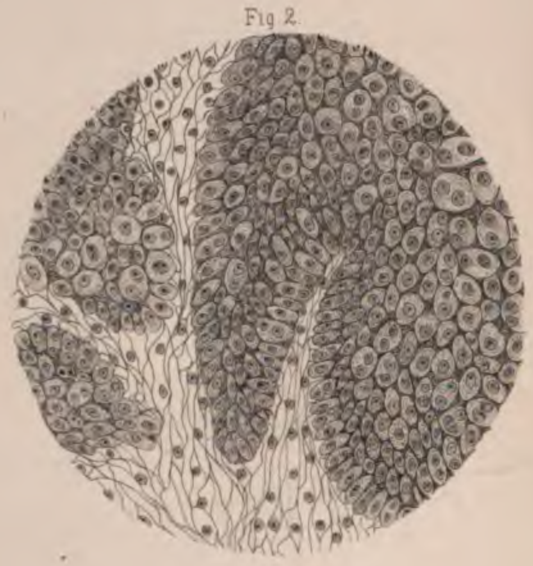


Fig. 2.



B H Cripps delt & sc

Mintern Bros imp

DESCRIPTION OF PLATE XIII.

FIG. 1.—Section of epithelioma. Slight bands of fibrous tissue appear to be forming from the walls of the epithelial cells.

FIG. 2.—Border of epithelioma advancing into subcutaneous tissue.

DRAWN AND LITHOGRAPHED BY B. HARRISON CRIPPS.

DISEASES OF THE RECTUM AND ANUS.

CHAPTER I.

THE ANATOMY OF THE RECTUM AND THE FUNCTION OF ITS MUCOUS MEMBRANE.

THE rectum varies in length from six to eight inches, the latter measurement being more common in advanced life, for, as age increases, the tortuosity of the bowel is more marked. The rectum extends from the left sacro-iliac symphysis to the anal orifice, the course at first being obliquely downwards for three or four inches slightly to the right of the middle line. It then regains the middle line and follows almost precisely the curve of the sacrum and coccyx as far as the prostate, making another bend slightly backwards to the anal orifice. The rectum is smooth and not sacculated, the separate longitudinal bands found on the rest of the large intestine being absent. Immediately above the anus is a dilatation, often of considerable size.

The rectum may be conveniently divided into two equal portions. Of these portions, the upper will be found in relation behind with the sacrum, separated from it by the pyriformis muscle, by branches of the ? internal pudic artery, and sacral plexus. In front, it is in contact with the posterior surface of the bladder (in man) when distended, and when the bladder is empty, with the coils of the small intestine. At its commencement the rectum is generally surrounded by the peritoneum, which binds it to the sacrum, but lower down the peritoneum covers its front surface only, and is then reflected on to the bladder, forming the recto-vesical pouch. In the female the vagina and uterus are interposed between it and the bladder. A knowledge of the exact distance to which the peritoneal pouch descends is of much importance. Anatomists vary considerably in their estimates of the distance from the anus at which the peritoneum is met with, but the want of uniformity in their results probably depends more on the manner employed in obtaining measurements than in any material deviation in the subjects experimented upon.

Dupuytren[1] gives the distance as about 70 millimètres, and further states that, if the bladder and rectum be completely empty, this distance is reduced, the peritoneum falling to the prostate.

Lisfranc[2] gives the distance as six inches in the female, four in the male, but does not state whether the bladder was distended or empty in his experiments.

Sappey, Velpeau, and Legendre nearly agree in giving the distance as about five and a half centimètres when empty, and eight centimètres when the bladder is distended. The English anatomists, Gray and

---

[1] La Médecine Opératoire de Lagutière et Depuytren, tom. iv. p. 218.

[2] Cancer du Rectum, Vidal, 1842.

Quain, make the distance four inches, but do not mention the state of the bladder or make a difference between the male and female. After careful measurement in a large number of bodies, I believe that two and a half inches when the bladder and rectum are both empty, and an additional inch when distended, will be about the average distance; the raising of the pouch by the distended bladder can be shown by injecting water through the ureter when the abdominal cavity is exposed. One of the means I employed in obtaining the measurements was by injecting the peritoneal cavity with plaster of Paris, and then thrusting a needle through the skin of the perinæum until its point impinged upon the plaster. My measurements correspond pretty closely with those of J. B. Roberts, who made a very complete and careful set of experiments in determining this question, his results being published in an interesting paper[1] read before the Philadelphia Medical Society.

The peritoneal pouch is pretty firmly fixed in its position, and in a healthy body can scarcely, if at all, be dragged down by pulling on the lower part of the rectum. In disease, however, especially if accompanied by a stricture, the constant straining of the patient during many months seems to render both the pelvic fascia and the peritoneal pouch much more mobile, and under such circumstances it is more readily drawn down.

The lower half of the rectum, extending from the third piece of the sacrum to the margin of the anus, is in relation behind with the sacrum, coccyx, and fibres of the levator ani. Anteriorly it is in relation with the vesiculæ seminales, the base of the bladder, and the under surface of the prostate in the male, while in the female it is in connection with the posterior surface of the vagina. At its termination it is surrounded by the sphincter muscles, while it is also partly supported by the levatores ani. In the male the distance from the anterior margin of the anus to the bulb of the urethra is usually a good inch.

---

[1] Medical and Surgical Report, Philadelphia, June 9, 1877.

The *Arteries* of the rectum are derived from the superior, middle, and inferior hæmorrhoidal, and sometimes a branch or two from the vesical. Of these, the superior hæmorrhoidal is the most important; it is the direct continuation of the inferior mesenteric, and runs down behind the rectum, slightly to the left of the middle line, between it and the sacrum, from about four to four and a half inches from the anus. It then divides into two branches, which almost immediately break up into three or four smaller branches, and run down parallel to one another close to the anal margin. These branches become looped, and anastomose freely with the middle and inferior hæmorrhoidal vessels. The main branches of the superior hæmorrhoidal running parallel with the bowel account for the smallness of the hæmorrhage from incisions made in its long axis and the profuseness of the bleeding from cuts made at right angles to its length. The fact of the lower part of the rectum being chiefly supplied by these branches, which run down in its coats, explains the comparative freedom from bleeding when isolating the lower end of the bowel from its lateral connections.

The *Veins* returning the blood from the anal margin are the middle and inferior hæmorrhoidal, the blood from which eventually finds its way into the internal iliac, but the rectum proper returns its blood by the superior hæmorrhoidal, from whence the blood passes by the inferior mesenteric to join the portal circulation. The superior hæmorrhoidal veins commence close to the anal verge, rather beneath the muco-cutaneous surface than the mucous membrane proper.

Some ten or a dozen minute primitive branches starting from little pouch-like dilatations, pass up the bowel for an inch or more, gradually converging into five or six larger veins, which uniting, eventually form the inferior mesenteric. For the first three inches the rectal veins run beneath the mucous membrane between it and the muscular coats. They then perforate the muscular coats running the rest of their course external to the bowel. Much attention has been called to the fact that the veins pass through the muscular walls, especially by Verneuil, who believed that the contraction of the muscular fibres of the rectum was one of the active causes of internal hæmorrhoids, by obstructing the flow of blood to the portal circulation, a view which I consider there is little evidence to support. Most standard works on anatomy[1] state that the hæmorrhoidal branches of the inferior mesenteric veins inosculate freely with those of the internal iliac, thus establishing a communication between the portal and venous system. Such a communication may exist at the anal margin of the rectum, but I believe it is extremely slight, and, moreover, if it does exist, the flow of blood can only be in one direction—viz., towards the iliacs.

---

[1] Gray's Anatomy, 5th edition, p. 438; also Quain's Anatomy, 7th edition, vol. i. p. 479.

This I have been able to demonstrate by the following experiments:—1st. The hæmorrhoidal plexus cannot be injected through the iliac veins, proving that if a communication exists that valves must prevent the blood flowing in this backward direction. 2nd. The hæmorrhoidal plexus can be at once injected through the inferior mesenteric, but the injection will not pass on into the iliac veins, so that if any communication exists it must be very slight.

The foregoing experiments in great measure corroborate the view so ably maintained by Mr. John Gay,[1] in his well-known work on hæmorrhoidal diseases.

The *nerves* supplying the highly sensitive surface about the anal margin, are derived both from the fourth sacral and the pudic, while the external sphincter and levator ani also obtain muscular filaments from both these sources. The terminal branches of these nerves communicate freely with the small sciatic, and through it with the sacral plexus and great sciatic. These communications probably explain the phenomenon of transferred pain sometimes experienced in rectal disease.[2] The rectum receives its nerve supply from the hypogastric plexus of the sympathetic.

The *lymphatics* of the anus are generally distinct from those of the rectum, the former running to the inguinal glands, the latter to the sacral and lumbar glands. It is important to remember this, for it will account for the constancy with which the inguinal glands become infiltrated after the anus has for any length of time been cancerous; while cancer of the rectum will often run its course without any external symptoms of glandular enlargement. I say occasionally, for notwithstanding that the cancer is well within the rectum and has not spread to the anus, the inguinal glands sometimes become infected, such as in two cases mentioned in the chapter on Cancer.

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[1] On Hæmorrhoidal Disorders, 1882, by John Gay.

[2] See case mentioned by Brodie, vol. iii. p. 141.

Levatores Ani.—I would wish to call special attention to the anatomy of these muscles, as having an important bearing on the mechanism of rectal stricture. With the valuable assistance of my colleague, Mr. Lockwood, I made a careful examination and dissection of these muscles, and found that the origin and insertion of the fibres do not correspond with the descriptions given in the ordinary text-books of anatomy.

Quain, Gray and Ellis give almost identical descriptions of these muscles, of which the following, from Quain,[1] is an example:

"The levator ani arises in front from the posterior surface of the pubes, near the symphysis, and midway between its upper and lower borders; behind, from the spine of the ischium, and between those points from the pelvic fascia along the line of attachment of the obturator fascia. Some of its fibres are also traceable upwards in the substance of the pelvic fascia above the level of the obturator. From this extensive origin the fibres of the levator proceed downwards and inwards towards the middle line of the floor of the pelvis. Its posterior fasciculi are inserted upon the side of the lower end of the coccyx; the bundles immediately in front of the coccyx unite in a median raphé with those of the opposite side as far forward as the margin of the anus; the middle and larger portion of the muscle is prolonged upon the lower part of the rectum, where it is connected with the fibres of the external sphincter, and slightly with those of the internal; and lastly, the anterior muscular bundles pass between the rectum and the genito-urinary passage, and descending from the side of the prostate unite beneath the neck of the bladder, the prostate and the neighbouring part of the urethra, with corresponding fibres from the muscle of the opposite side, and blend also with those of the external sphincter, and deep transverse peritoneal muscles."

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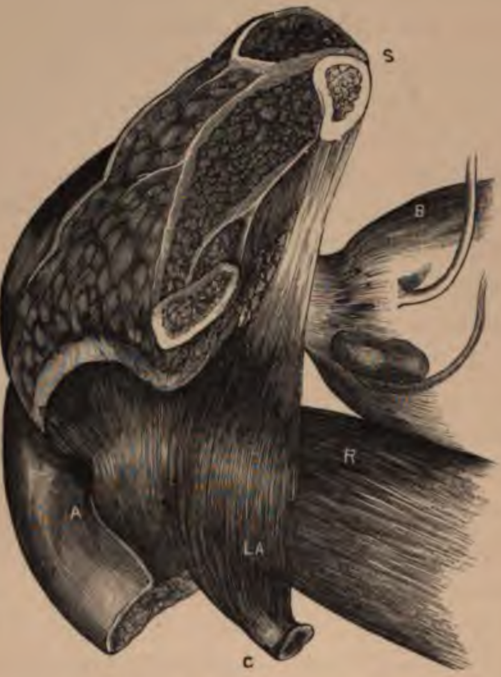
[1] Quain's Anatomy, 7th edition, vol. i. p. 262.

With the greatest respect to the authorities quoted, I venture to assert that the description is inaccurate, and the following account I believe will be found to correspond to what may be seen in the dissected body.

In proof of the accuracy of my observations, I would refer my readers to two of Mr. Pearson's specimens at the College of Surgeons. One of these is a side view of the parts, and is used as one of the dissections at the primary anatomical examinations. The other is in the museum, and shows both the levatores ani in position as dissected from behind.

If a side view of the pelvis be made, and the part dissected in such a way as to expose the whole of the outer surface of the levator ani, it will be seen that a large portion of the fibres arising from the inner sur-

Fig. 1.



SIDE VIEW OF THE LEVATOR ANI.

A, anus; B, bladder; C, coccyx; R, rectum; L A, levator ani muscle; S, pubic bone sawn through external to symphysis. The fibres of the levator ani are seen arising by a tendinous attachment from the pubic bone, the posterior fibres then cross the rectum at nearly right angles, two inches from the anus, to be inserted into the coccyx.—Drawn from a dissection by William Pearson at the Royal College of Surgeons.

Note.—Page 9, line 15, refers to fig. 2 on next page.

To face page 9.

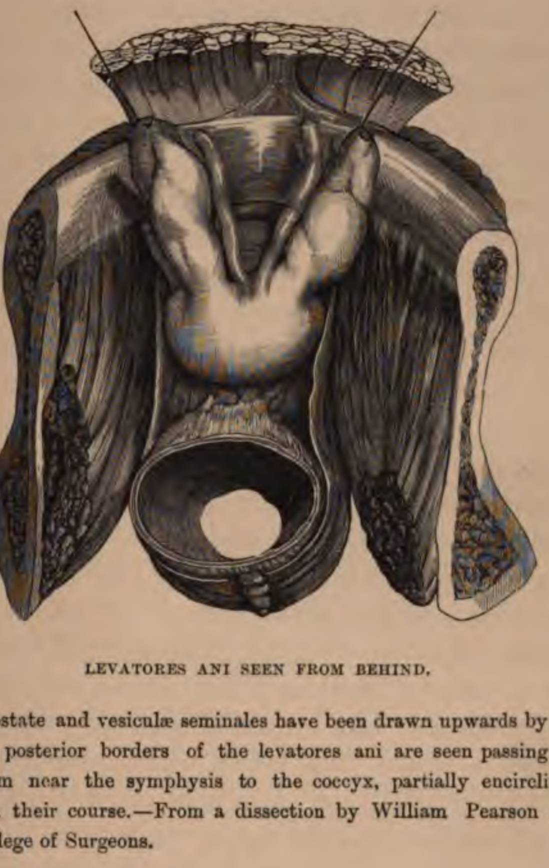
face of the symphysis and from half an inch of the anterior portion of the white line pass obliquely downwards and backwards, to be inserted on the sides of the coccyx. The upper half of the muscle is tendinous, while the lower half, or that attached to the coccyx, is muscular. The posterior edge of the muscle is somewhat thicker, and forms a distinct and free border, which crosses the rectum at very nearly right angles; the point of bisection being an inch and a half to two inches from the anus. In the specimen referred to in the College of Surgeons, there is a particularly thick band of fibres thus passing from the inner surface of the symphysis to the sides of the coccyx. (See fig. 1.)

Again, by referring to this drawing (fig. 2.), in which both muscles are seen *in situ* from behind, it will become obvious what must be the action of the levatores ani when they both contract simultaneously. So far as the coccyx is movable, they will tend to draw that bone upwards towards the symphysis, but, since in most bodies the coccyx scarcely moves, they will act powerfully as compressors of the rectum, squeezing the sides of the canal together as it passes between their two inner surfaces. In fact, when contracted, owing to their insertion near the middle line, they assume a shape like the letter V, the arms of which only diverge about an inch from each other at their attachment to the symphysis.

On passing the finger into the bowel of a dissected specimen, and then drawing on the origin of the muscles, the sensation is communicated to the finger as if a cord or narrow piece of tape were encircling the bowel on its outer surface.

Now if the finger be passed into a healthy bowel, a momentary grip will be felt as it passes through the lower portion. This, no doubt, is due to the reflex contraction of the internal sphincter muscle. The contracting portion of the bowel is generally the last inch, but sometimes, however, the contraction extends further up, a discrepancy due to the varying width of the internal sphincter fibres. If the patient be now told to draw up the bowel as much as possible by voluntary movement, the finger will be found again to be grasped by the lower portion of the bowel. The amount of bowel thus voluntarily contracted varies greatly in different individuals. In some the contracted portion ends at least an inch and a half from the anus, corresponding to the tip or sides of the coccyx. The upper margin of the contracted portion ends abruptly, and gives a sensation of a broad muscular band round the bowel, not crossing it exactly at right angles to its axis, but set slightly obliquely as if sloping towards the coccyx. Since this contraction is brought about and maintained voluntarily it cannot be due to the internal sphincter, an involuntary muscle, neither is it owing to the external sphincter, which merely surrounds the anal outlet. But by remembering the dissection I have already described of the levator ani, it will at once be seen that these contracting fibres really belong to that muscle, and especially to those fibres which pass from near the symphysis to the sides of the coccyx. In women these fibres are more highly developed than in men, no doubt owing to the muscular floor of the pelvis having to support more important organs than in the male.

FIG. 2.



LEVATORES ANI SEEN FROM BEHIND.

The prostate and vesiculæ seminales have been drawn upwards by hooks. The free posterior borders of the levatores ani are seen passing downwards from near the symphysis to the coccyx, partially encircling the rectum in their course.—From a dissection by William Pearson at the Royal College of Surgeons.

To face page 10.

Some of the fibres of the levator ani, or, at any rate some of the fascia to which they are attached, pass over the rectum blending with the fibres of the opposite side, which helps to explain the sphincter-like action that can be exerted by these muscles on contracting, and throws much light, as will be subsequently explained, on the pathology of rectal stricture.

The *Rectal Walls* consist of four coats—mucous, submucous, internal muscular, and external muscular. These coats can be readily separated the one from the other by dissection. From the mucous and submucous tissue many fibrous bands run down perpendicularly between the bundles of muscle, and these fibres becoming slightly thicker form a septum between the muscular bands (figs. 1 and 2, Plate I.). Upon reaching the plane between the external and internal muscular coats a large number of the fibres assume a horizontal direction, while others pass vertically into the external coat, where they again form the septa between the bundles of muscle. Some fibres pass quite through the external coat and blend with the fibrous stroma of the surrounding fatty tissue. From the perpendicular septa dividing the larger muscular bundles numerous fine processes pass off between the muscular fibres; these again subdividing form the ultimate sheaths of the individual fibres of muscle. It will be thus seen that the connection between the various coats is formed by portions of fibrous tissue being directly continuous from one to the other, and also by the continuity of the blood- and lymph-vessels. The total thickness of these coats collectively varies greatly in different subjects. The variation is found chiefly in the muscular coats, the other two coats remaining pretty constantly of the same thickness.

At three to four inches from the anus in a healthy rectum the thickness of the mucous membrane, that is, from base to apex of a follicle, is millimètre 0·4.

Mucous Membrane.—This consists of Lieberkühn's follicles and the intervening tissue. The follicles are tubular depressions arranged with great regularity; they are set so close together that the width of the intervening tissue is, on the average, about one-sixth the diameter of the follicle. (See fig. 2, Plate I.) The length of the tubes is about four or five times their diameter, the respective measurements being—length, millimètre 0·35; diameter, millimètre 0·08. These tubular depressions are lined with epithelial cells arranged with their long axes at right angles to the cavity. The apices of these cells look into the cavity of the follicle, while their bases rest upon the adjacent retiform tissue. On cross section it is seen that from fifteen to twenty cells are required to complete the circular lining. While from above downwards their number amounts to forty or fifty. Taking the higher figures in each case, 20 × 50 = 1000 will represent the number of individual cells in each tubular depression. In each square inch of the large intestine there are about 57,000 follicles—the number of cells 57,000 × 1000 = 57,000,000—in each square inch. These cells are directly continuous with those lining the surface of the mucous membrane, and are, therefore, continuous from one follicle to another.

The length of the individual cells varies greatly, but have an average length of about $\frac{1}{500}$th of an inch, with a diameter of $\frac{1}{2000}$th. The lumen of the follicle occupies one-third of its diameter.

The appearance of the cells is analogous to the bee's honeycomb—that is to say, that the intervening wall is common to two cells, or has become common by fusion with its neighbour. This appearance is seen in fig. 20, Plate II., the pressure of cells one upon another causing them to take a well-marked hexagonal form. The cell boundary is a structureless material formed by a condensation of the peripheral portion of the cell substance. The interior of the cell contains a semi-transparent material more or less granular. One or more nuclei are contained within the cell, situated nearer the base than the free end.

The intertubular tissue consists of a fine trabecular network, the meshes of which are very long in the vertical direction, looking, as is probably the case, like narrow lymph-paths running in a direction parallel to the follicles. These meshes are filled with small cells (leucocytes). Perhaps, however, it is hardly right in health to describe the interfollicular tissue as a network, since it is often not more than a single channel. Lymphoid tissue also forms the bed upon which the tubular glands rest. This tissue is well supplied with blood-vessels.

The submucous coat is chiefly composed of a network of retiform tissue, in which blood-vessels ramify freely. The whole of this network of spaces gradually converges towards the thin straight lymph-paths which run horizontally both in the submucous tissue and between the layers of muscular fibre.

take place through the epithelium, or through the substance between the individual cells.

It appears, however, highly probable that this so-called intercellular substance (or spaces) is nothing more than the blended outline of two adjacent cells, on the grounds given on a subsequent page, in which case absorption would really take place through the epithelial cells themselves.

Possibly the nuclei of the columnar epithelium may be the means of taking nourishment into the body by escaping into the retiform tissue between the glands, and thus becoming lymphoid cells. According to this view, the columnar epithelial cells lining the intestinal follicles have a far higher function than that generally assigned to them by physiologists, and instead of being employed in a simple secretion of mucus, they are in reality the parents of the leucocytes of the body. They might thus be regarded as representing so many points of individual life, absorbing their nourishment from the intestinal contents, and multiplying by the division of their nuclei, which are passed into the subjacent retiform tissue. The network of retiform tissue underlying the epithelium must be regarded as the dilated commencement of the intestinal lymph system, spread out so as to receive the nuclei from the superjacent epithelium, and to convey them along the lymph-channels to the circulation. It is perhaps dangerous to argue from morbid specimens that a similar process takes place in health. Nevertheless, microscopic evidence afforded by some of my specimens is very suggestive of the theory propounded. One of my specimens, shown at the Pathological Society in 1881, represents an appearance so clear and remarkable, that it may be well to give the history of the specimen.

Although I have some thousands of sections cut from many different specimens, the specimen exhibited, together with two or three imperfect slices from the same growth, are the only ones in my possession which show, with anything like similar distinctness, the appearances about to be described.

The section in question was taken from a recurrent nodule, or more probably from a portion of growth which had escaped removal at the first operation. A portion of growth, about the size of a small hazel-nut, was, at the instant of removal, placed in weak chromic acid solution, being subsequently transferred to spirit and dyed with logwood in the usual manner. It would seem, therefore, that the exceptional clearness of the specimen was possibly due to its rapid transfer to the hardening fluid.

In this specimen the nucleus-like bodies towards the base of the cylindrical epithelial cells forming the surface of the hypertrophied mucous membrane are remarkably clearly defined owing to the intensity by which they have taken the staining. In the subepithelial retiform tissue a considerable number of lymphoid cells are similarly darkly stained. In form, size, and the extent to which they have taken the dye, there is no perceptible difference between the bodies (nuclei ?) within the epithelial cells and the bodies (leucocytes ?) within the retiform tissue.

It is scarcely possible not to believe but that they are identical the one with the other. The difference of situation alone remains, and even this in portions is no longer noticeable, for here and there the bodies can be seen so close upon the boundary line between the epithelial and the retiform tissue, that it would not be possible positively to state whether the body should still be regarded as a nucleus within the epithelium or as a lymphoid cell in the retiform tissue.

In other specimens suggestive appearances may be seen as to the identity of leucocytes and epithelial cells, if, for instance, the apex of a growing epithelial bud, such as can be seen in Plate VII., be examined, the young cells which first appear have no visible features by which they can be distinguished from the leucocytes or granulating tissue. This gradual conversion of the lymphoid into the epithelial type can also be well studied when these morbid growths are extending into adipose tissue. Plate XI. is a section of some fatty tissue lying external to the rectal wall, into which the new growth is gradually penetrating. In some portions of the specimen the fat cells are normal, in others they are completely replaced by the growth.

The first appearance of morbid infection consists in the infiltration of a single layer of leucocytes between the walls of the individual fat cells in such a way that they (the fat cells) become completely surrounded by a one-celled layer of leucocytes. It can next be observed that these leucocytes, surrounding themselves with protoplasm, gradually increase in size, and, in so doing, compress the fat cells between whose walls they lie, so that after a time the outline of the original fat cell is represented by a ring of new growth, a small cavity only remaining to mark the spot of its existence. This, too, in its turn, often becomes completely obliterated by its walls being compressed into apposition, so that all that remains of what once was the cavity of a fat cell is a double line of fine fibrous tissue, the compressed walls of the original cell.

In the meanwhile the invading growth, which was primarily represented by a layer of leucocytes, is represented by large epithelial cells into which the leucocytes have grown, arranged in a circular manner (Plate XII.). It is upon this evidence and that of the growing epithelial buds that the possibility of the development of the lymphoid into epithelial cells is based.

If we now refer to the specimen described on p. 17, and figured in Plate X., and consider what evidence can be adduced to establish that the lymphoid bodies are rather travelling from than towards the epithelium, it must be remembered that the argument is that a lymphoid cell can develop into an epithelial cell, and that an epithelial cell can produce a lymphoid cell.

If the bodies were travelling into the epithelium they must be disposed of in one of the following ways. They must either accumulate within the epithelial cells, or pass out of the free extremity, or be dissolved, and disappear within the original protoplasm of the epithelium, or develop into an epithelial cell, so that they can be no longer separately recognized. That they neither accumulate nor pass out of the free extremities can be proved, nor does it appear that they are supplying the place of epithelium that has been shed, for the line remains unbroken. It is not of course possible to prove that they do not disappear by absorption. On the other hand, there is some strong indirect evidence that these lymphoid bodies have been derived from the epithelium, for it is in their collection immediately beneath the hypertrophied epithelium that the first evidence of the tumour formation is evinced, and, as will be subsequently shown, they invariably form the advanced guard of extending adenoid tissue. At first sight it must be admitted that this accumulation of leucocytes on the outskirts of the growing tumour would as easily admit of the interpretation that they had come from distant parts, as that they had been developed from the local cells. Dr. Moxon, and other observers of high repute, state that not infrequently they have observed in nodules in the liver secondary to rectal cancer, not merely columnar epithelial cells, but a structure actually identical with Lieberkühn's follicles. The deduction to be drawn from these secondary deposits is that they grow from cells originally derived from the rectum. Now, it is scarcely possible to conceive that the large columnar-shaped epithelial cell of the rectum can be transmitted, in the bulk of its complete form, through the intricate lymph-paths between the rectum and the liver; but no such mechanical difficulty lies in the path of the smaller lymphoid cell, which, when arrested in the liver, grows to the likeness of its epithelial parent.

I claim on the foregoing evidence that there is some support to the theory I have advanced as to the formation of leucocytes by the epithelium. Although, of course, it falls short of actual demonstration, I believe it to be worthy of some further attention.

CHAPTER II.

MALFORMATIONS OF THE RECTUM AND ANUS.

It is difficult to form any accurate estimate of the percentage of infants born with an imperforate bowel. Anger[1] states that he had met five instances of imperforate anus in 2,000 midwifery cases. Dr. Henry Duncalfe[2] gives, as his experience, five cases in 3,000 births. Teinturier,[3] in his paper on this subject, mentions that out of a total of 73,000 confinements, reported by Conture of Havre, Collins of Dublin, Gohre of Vienna, and by Trélat of Paris, there were only seven cases of imperforate anus, or about 1 case in every 10,000 births. These statistics diverge somewhat widely, but if added together, give 1 case in every 4,588 births.

Pathology.—Rectal malformation results from arrested development of the part in early fœtal life, and it may be of interest briefly to recall some of the facts illustrating the development of this portion of the body. At its earliest commencement, the alimentary canal is represented by a simple bag, containing the yelk, and is developed from the innermost layer of the blastoderm. As the fœtus grows, it closes round the yelk-sac, constricting it in the middle so as to enclose a portion within the body, the remainder being outside. At first the sac within the body communicates freely with that without, but the channel of communication between the two gradually contracts, and is eventually completely occluded. The portion of the yelk-sac remaining within the fœtus develops into the intestinal canal. It quickly loses its circular shape and becomes oval, its long diameter being parallel with that of the growing fœtus. By a continuation of the lengthening process, the ovoid sac becomes a long straight canal, still closed at both extremities. As the fœtus increases in size, so does this canal firstly become bent and eventually convoluted. At this period the intestinal canal terminates in a cul-de-sac towards either extremity of the fœtus. The external membranes of the body at the mouth and anus become depressed in such a way as to form short channels leading into the body, terminating in cul-de-sacs. The cul-de-sac of the anus comes in contact with the blind termination of the rectum, and it is by the absorption of the two intervening layers that the communication between the rectum and anus is established. The greater portion of malformations of the anus and rectum are due to the latter stages in the process just described being incomplete. The termination of the rectum in the genito-urinary tract is due, in addition to the arrest of development just mentioned, to a failure in the complete formation of the septum, separating the rectum from the genito-urinary tract, which, in early embryo life, have but one common orifice.

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[1] Boston Medical Journal, vol. xcv. p. 532.

Brit. Med. Journ. 1873, vol. i. p. 34. [3] Bull. Soc. Anat. v ol. xvi. p. 305

The explanation of this arrested development is unknown. By some authorities[1] it is attributed to a malformation of the hæmorrhoidal vessels, the blood-supply necessary for the development of the part being absent. Other authors attribute such imperfections to an impaired nerve-supply. These explanations are not satisfactory, since they merely remove the difficulty a stage further back, the cause of the deficient blood or nerve-supply being still unknown. Though it is not possible at present to explain the primary cause of these malformations, such a deficiency of knowledge is little to be regretted, except from a scientific standpoint; for, occurring, as it must, in early embryo life, it does not admit of prevention.

Without classifying a few rare and exceptional varieties it will be found that the chief malformations come under one or other of the following clinical divisions:—

I. The anus, more or less clearly defined, terminating in a cul-de-sac a certain distance from the orifice.

II. Complete absence of anus, the fold of scrotum extending back in an unbroken line to the coccyx.

III. The anus and rectum may be well formed, and of normal calibre, but the latter may be obstructed by a delicate fold of membrane stretching across its interior.

IV. The anus and bowel may be perfectly formed, but the outlet obstructed by a tail-like fold of skin extending from the scrotum to the tip of the coccyx. A small opening may exist on one or both sides of this fold.

V. The bowel may open in some portion of the genito-urinary tract. In the female this is almost invariably by a communication through the posterior wall of the vagina, while in the male a communication exists between the base of the bladder and the bowel, or, more commonly, between the bowel and the prostatic portion of the urethra.

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[1] MM. Serrés.

In the first and second series, the rectum terminates at an uncertain distance from the site of the anus, or bottom of the anal cul-de-sac. In the majority of cases it will be found terminating in a blind pouch within an inch or an inch and a half of the normal outlet. If the anus is clearly marked, terminating in a deep cul-de-sac, the prognosis is less favourable than when the anus be completely absent, for in this latter case it commonly happens that the blind pouch of the rectum is close beneath the skin, the deformity being merely due to the skin of the anus failing to become invaginated.

In the 18th volume of St. Bartholomew's Hospital Reports, I published a Table of 100 cases of operation for imperforate anus and rectum, collected from the records of the hospital and other sources. Amongst these cases were 35 instances in which a well-marked anus was present. Of these 23 died after operation; while, in the 23 cases in which no anus was present, the skin being unbroken from the perinæum to the coccyx, only 9 died.

The third division of malformations is comparatively rare. In the College of Surgeons there is a specimen of this obstruction, a fold of mucous membrane in the form of a complete diaphragm occluding the otherwise normal bowel, at a distance of three inches from the anus.

The fourth division is also uncommon. Mr. Morgan, at the Children's Hospital, has recorded two exceedingly interesting cases[1] coming under his observation. I also have had an opportunity of examining a case under the care of Mr. Willett in Sitwell Ward. It had the appearance of a small tail-like prolongation of skin, extending in the form of a thick ridge from the tip of the coccyx to the perinæum. Sometimes this fold may completely occlude the anal outlet, or it may form a bridge-like obstruction, leaving a small fissure on each side.

The fifth division includes all the cases in which the rectum terminates in some portion of the genito-urinary tract. In my Table there were 25 such cases, 13 in the male, 12 in the female. In the males the anus was completely absent in the great majority of cases, a smooth line extending from the scrotum to the coccyx; and 10 out of the 13 infants died. In all these cases a post-mortem examination disclosed the nature of the deformity, and the situation of the communication with the urinary passage. In 6 cases a fistulous communication was found between the prostate and the rectum. In the remaining cases the communication was directly with the bladder. In one case the rectum terminated at the fundus of the bladder; and in another the communication was by a minute opening, at the base of the bladder. In a third it terminated close to the urethral opening, whilst in the last case the bowel ended at the sigmoid flexure, which communicated with the upper part of the bladder.

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[1] Lancet, Oct. 22, 1881.

The extremely unsatisfactory results of operative interference in this class of cases in boys shows it to be one of the gravest forms of malformation, and but little amenable to surgical treatment, for of the 13 cases just mentioned only 3 survived.

The malformation in the female in which the rectum terminates in the vagina is fortunately far less grave. In all the 12 instances recorded the opening was in the posterior wall of the vagina, just behind the hymen. In some, the communication was sufficiently patent to allow of the free escape of fæcal material, in others the communication was so small as only to admit of a fine probe. Eleven of the twelve cases did well after operation.

The symptoms of congenital obstruction of the bowel are, as a rule, too clear to admit of any doubt in the diagnosis. The failure in the infant to pass anything by the anus quickly attracts attention. By the third or fourth day vomiting is established, while at the same time the abdomen becomes distended. In the majority of cases an examination of the anus demonstrates the nature of the deformity. Occasionally difficulties or mistakes may arise in the diagnosis. I have made a post-mortem[1] on an infant in whom Littré's operation had been performed for a supposed imperforate rectum by one of the most careful and experienced of London surgeons. In this case (1.) on opening the abdominal cavity at the post-mortem, it was discovered that the symptoms were not due to imperforate bowel, but to a volvulus low down in the small intestine. The whole length of the large intestine was empty, and contracted into a cord-like structure, which appeared never to have been distended with meconium. The contracted bowel gave to the finger when introduced by the anus the exact sensation of an occluded rectum; the bowel, however, was readily expanded by inflation. Chairon,[1] Tuck,[2] and Duncalfe[3] each record a similar error in diagnosis.

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[1] Path. Soc. Trans. vol. xxxi. p. 111.

If the obstruction be beyond reach of the finger, or if there be any doubt as to its completeness, a careful examination with a probe, or an injection of water by a small syringe, will establish the diagnosis.

Prognosis.—The difficulty of dealing with cases of imperforate anus has been long felt by surgeons. A doubt seems to have risen in the minds of many as to whether any attempt should be made to deal surgically with such a condition, and it has been argued that unless the obstruction be in the immediate neighbourhood of the anus, the only effect of successful surgical interference is to condemn the infant to a life of suffering from a contracted anus or an artificial opening in the groin.

Even if these premises were correct, it appears to me to be part only of the question which is frequently arising in operative surgery, as to whether it is justifiable to prolong a life which will probably be one of discomfort and suffering. So long as the views of life with regard to its present and future admit of infinite variation, and the capacity for pleasure or pain appertains at least as much to the mind as the body, it would appear to be scarcely within the province of a surgeon to constitute himself the arbitrator between life and death. In these cases of imperforation, the infant, if unrelieved, will surely die[1] from intestinal obstruction, one of the most distressing forms of death.

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[1] Bull. Soc. Chir. Paris, s. 2, vol. iii. p. 165.

[2] Boston Med. and Surg. Journ. vol. xcv. p. 534.

[3] Brit. Med. Journ. 1873, vol. i. p. 34.

By an operation, relief to the immediate symptoms can almost certainly be obtained, and it is even possible that a complete and permanent cure may be effected. In these circumstances, therefore, the surgeon is certainly justified in strongly urging an operation.

In undertaking any operation for the relief of congenital obstructions, success, I am sure, will, in no small measure, depend on the confidence the operator feels in his ability to give relief, and perseverance in the subsequent treatment will be greatly stimulated by the knowledge that a permanent cure is possible. With this view the following cases are of interest, as showing what may be accomplished by skill and perseverance.

Owing to the extreme kindness of Dr. Berrut, of Rue de Belle-chasse, Paris; Mr. Gravely, of Newick; Mr. Rowan, of Melbourne; Mons. Verneuil, of

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[1] Mercier records an instance of a well-nourished girl of 13, born with imperforate rectum, who, on every fourth or fifth day, evacuated fæcal matter by vomiting. This, so far as I know, is the only case on record in which an infant has survived beyond a few months at the outside, and even in this case some of the details recorded throw doubts upon its authenticity. It is not uncommon for a child to survive some weeks, and quite recently an infant was brought to St. Bartholomew's Hospital on the second day after its birth with an imperforate rectum. The parents were advised to have an operation performed on the ground that the infant could only live a few days. This they refused, throwing doubts on the prognosis, and a month later brought the baby to confirm their own views. The child certainly appeared well nourished. It had fæcal vomiting about three times a day, and the belly was much distended.

Boulevard de Paris; Mr. Taylor, of Ticehurst; Dr. F. Goëde, of Bourbon-Lany; Dr. Mourlon, of Paris; Dr. Thorn, Toledo, U.S.; Dr. McCoy, of Jeffersonville, Indiana, U.S.; and Mons. Delans, I am enabled to give an account of a few cases, extending to a much later period than the records published by the operators.

Case 2.—Female child,[1] born with imperforate anus, and with a small fistulous opening into the vagina just behind the hymen. The anus was established, without difficulty, in the normal position. A few months later the recto-vaginal fistula closed. Before long, however, the newly established anus had contracted to a mere fistulous passage. This was gradually dilated by bougies introduced two or three times a day. In a short while the contraction disappeared.

Dr. Berrut, in answer to my inquiry as to the latest progress of the case, kindly sent me the following reply:—

"The patient about whom you ask was operated upon by me at Marseilles, whence I have just returned. I heard of the patient from the family doctor on the 20th of last month. The little girl upon whom I operated on May 14, 1860, is now 'une grande demoiselle' 20 years old, very intelligent, and enjoying excellent health. She was much troubled with diarrhœa until she was 7 years old. Her monthly periods commenced at the age of 14, and since then the rectal functions have been normal. The bowels are opened naturally once a day, the stools being soft and perfectly healthy."

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[1] Berrut, Bulletin de la Société de Chirurgie, vol. iii. ser. ii. p. 167.

Case 3.—Male child.[1] The anus terminated in a cul-de-sac about one inch from the surface. Between this and the termination of the rectum was half an inch of dense fibrous tissue which was perforated with a trocar. During the next three months bougies were frequently passed to prevent contraction.

I wrote to Mr. Gravely, asking for information as to the result of the operation, and his reply was to the following effect :—

"The boy lived to be 14 or 15 years of age, and then died of scarlet fever; up to that time he was perfectly healthy, never having, that I can remember, a day's illness; certainly never any trouble with regard to the rectum."

Case 4.—Male child,[2] born April 1876. No opening or depression of any kind to mark the presence of the anus. An operation by incision was performed on the third day, and the rectum found and opened at the depth of 2½ inches. For several weeks a large bougie was passed every second day to keep the canal patent. The case was then lost sight of till February 1877. For some months the child had had no bougie passed. The orifice was so contracted that it would not admit a probe. For five months all the motions had come through the penis. The child was again operated upon, and the rectum opened so as to admit the finger; five weeks later the child was well, and passing fæces by the new opening, none having passed by the penis since the second operation.

[1] Gravely, Brit. Med. Journ. 1860.

[2] Rowan, Australian Med. Jour., vol. xxii. p. 67.

Mr. Rowan writes to me from Melbourne, concerning this case, saying :—

"I regret to say that my little patient is not alive, having died some time since of measles complicated with pneumonia. The last time I saw him the bowel was perfect, and could not have militated against him in his last illness."

Case 5.—Male child,[1] two days old, with a well-formed anus terminating at eighteen millimètres in a cul-de-sac. An incision and prolonged research failed to find the bowel. The coccyx was then resected, and the bowel found without much difficulty. The end was then drawn down and opened, but being too short to come in contact with the anal cul-de-sac was stitched to the inverted skin in the site of the resected coccyx. For the first few months there was a tendency in the opening to contract, but this was overcome by introducing a finger three times a day, and after a while the tendency to contract ceased. Nine years later the boy was in excellent health, and had no contraction or incontinence, nor any trouble with the anus.

Case 6.—A well-formed male child.[2] No trace of an anus, but in its place a slight projection. A dissection carried deeply into the middle line after an incision extending to the coccyx failed to find the bowel. The coccyx was then resected, the termination of the intestine found, and opened from behind.

Dr. Verneuil has communicated to me the results of the operation in these two cases in a letter dated December 1880 :—

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[1] Verneuil, Bull. Soc. Chir. Paris, 1873.

[2] Ibid.

"I give you all the information I can regarding my two patients. The first one is now a fine fellow of 17 years, bearing no trace of the operation, nor has he ever experienced the slightest functional trouble; so the family doctor has just assured me. The second patient was brought to see me two years after the operation. The anus had a certain tendency to contract, whilst the mucous membrane formed a small swelling, in the shape of a prolapse of about half a centimètre. I advised digital dilatation, and the administration every morning of a douche of cold water on the anal region. These means were completely successful, and when I saw the mother of the child eight years after the operation, she told me that the cure was as perfect as possible."

Case 7.—Female,[1] no anus, rectum opened into posterior wall of vagina. A director passed by the vagina made the anus project, the point of the director was then cut down upon. The rectal mucous membrane was partly dissected from the vagina, and also from its posterior attachments, drawn down and stitched to the skin of the perinæum. A silver wire was then passed deeply between the anus and vagina. The wound healed, and no fæces passed through the vagina.

Mr. Taylor has kindly replied to my letter, and he writes in January 1881, saying:—

"Having to pass the house to-day, where the patient resides, I called and saw the child on whom I operated. She is a very strong, healthy looking girl: there is a stout septum between the rectum and vagina, but little or no perinæum. The child, a year and a half old, seems to have some power over the anus, but to what extent is difficult to ascertain in one so young."

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[1] Taylor, Brit. Med. Journ. 1879, vol. ii.

Case 8.—Female child,[1] born June 1872, very feeble, having no trace whatever of an anus. Goëde performed Littré's operation on the right side. The small intestine at first presented itself: this was pushed back, and the large intestine then found, stitched to the skin and opened. Large quantities of meconium immediately escaped. About the ninth day, the child being well, and the opening in the groin well established, a sound was passed into the artificial anus, and discovered a cul-de-sac a short distance from the wound. The sound was pressed downwards, and could be felt projecting beneath the skin just below the coccyx. The skin in this region was then incised, and the parts beneath separated with the finger-nail till the metallic sound could be seen, covered only by the cul-de-sac of the rectal walls. This was opened, drawn down, and stitched to the skin. Fæces did not pass by the anus thus established, and on the third day the child had an attack of erysipelas. The parts were then left quiet for a fortnight, during which time fæcal material passed by the groin. A fortnight later, the wound in perinæum having cicatrized, and the anus closed, an operation was again repeated on the anus, the parts being clean cut, instead of being dissected with the finger. After this date fæces passed regularly, and with ease, from the rectal anus.

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[1] Goëde, Jour. de Méd. et de Chir., s. 3, tom. xlix. p. 456.

Dr. Goëde has kindly communicated to me the result of the last operation. In his letter, dated December 1880, he says :—

"The child was operated on for the last time in July 1872, at 2½ months old. I saw her for the last time in August 1873, at 14½ months. It was at the time of the departure of her parents, and I did not see her again. Still, I was able to obtain information regarding this interesting case until her death, which took place in the winter of 1876 from pneumonia. Her parents died in 1877 and 1878.

"There are two facts worthy of record in this case :—

"*Firstly.* What I myself saw and have stated.

"*Secondly.* What witnesses worthy of credit have told me.

"1. In November 1873, the child, aged about 14 months, was enjoying good health and growing. The opening made in the right iliac fossa had perfectly healed. The perineal opening was the only one in use, and the fæces had not passed continuously since she was weaned, and partook of more solid food. A close examination showed that this opening was narrow, though very dilatable, the finger passing easily, and meeting with no resistance comparable to that of a sphincter. Nevertheless, since weaning, the fæces passed in an intermittent way, and met with an obstacle to their free passage, though the anal orifice was very dilatable.

"2. The child died at four years and four months. Her growth had continued, and she was of the same size as children of her own age, and had never been ill. She retained her fæces perfectly, and it was no longer necessary to take any particular care for cleanliness, excepting when she had diarrhœa. They assured me that this child did not soil her linen more than other children of her age. It is probable that at this period the lower portion at least of the anal sphincter had developed and become strong, and I have no doubt that time would have still further ameliorated this very satisfactory state of affairs."

Case 9.—A child[1] born without an anus, but with a fistula communicating between the back wall of the vagina and rectum. The anus was restored, and after two operations the fistula closed. The child made a good recovery, and was doing well two months after the operation.

The subsequent history of this case is given in a letter addressed to me by Dr. Mourlon:—

"My little patient of La Colle died at the age of a year and a few days old of capillary bronchitis. Defecation was absolutely normal, as the rectal swelling was very near the skin. All the functions were natural, and the child was strong and well formed, and nothing would have led one to suppose that she had been born with imperforate anus."

Case 10.—A male child,[2] having a mere dimple in the site of the anus. Urine stained with meconium. Dr. Thorn, in January 1869, after carrying a dissection in the middle line to the height of two and a half inches, found and opened the bowel, which was not drawn down or stitched to the skin. During the first few months the opening was kept patent by passing a conical bougie.

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[1] Mourlon, Bull. Soc. Chir. Paris, 1873.

[2] Thorn, Toledo Med. and Surg. Journ., vol. iv. p. 449.

November 12, 1872.—Patient thriving, and in all respects equal to children of his age; has no trouble either in retaining or passing fæces from rectum, the sphincters being in full force and action.

Case 11.—Male.[1] Raphé well defined; no anus; the bowel was reached at a depth of one inch. Six weeks later the child was doing well, and passing fæces without trouble.

Dr. Thorn has forwarded to me the results of his experience as follows:—

"I send you by this mail a copy of the Toledo Medical and Surgical Journal. In it I report six cases operated upon, five of which were by me, with practically four successes. I desire especially to call your attention to part underscored on p. 454.[2] So far as I know all who survived the operation still live, and are doing well, the parts performing the functions allotted to them, the control of fæces and flatus being perfect."

Case 12.—A female child.[3] No trace whatever of anus, the fæces passing through the vagina. This condition had existed some time, and the child did not suffer from obstruction. On examination an opening was found between the posterior wall of the rectum and the vagina. An operation was performed by passing a curved sound through the fistula into the rectal cul-de-sac. An incision was then made in the middle line in the normal site of the anus. The rectal pouch was drawn down, opened, and stitched to the skin. For a time a portion of the fæces passed by this opening, but the quantity, always small, gradually diminished, and at the end of two months the opening had almost closed. A second operation was then performed, and it was found that a fold in the posterior wall of the rectum, occupying three-fourths of the calibre of the bowel, acted like a valve, directing the fæces through the fistula, and not through the new opening. By steady pressure backwards this obstruction gave way, and a tube, two and a half inches long, with a diameter of five-eighths of an inch, affording a complete passage for the fæces, was retained for eight weeks. During this time the recto-vaginal fistula had completely closed by granulation.

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[1] Thorn, Toledo Med. and Surg. Journ., vol. iv. p. 449.

[2] Condemning the practice of drawing down the bowel and stitching it to the skin.

[3] McCoy, Amer. Journ. Med. Science, vol. lxxiv. p. 287.

Dr. McCoy writes thus to me from Jeffersonville :—

"Since replying to your first note of inquiry relating to my operation for imperforate anus, I have since learnt the locality, and made inquiry after the condition of the patient. The fæces are still discharged through the artificial opening, which, after the lapse of six years, has normal power of retention."

The foregoing cases are certainly encouraging, and justify the surgeon in holding out a certain amount of hope. Nevertheless, it must be remembered that such excellent results are very exceptional, and I select the cases as showing rather what *may* be accomplished than that which commonly happens. In my table already referred to the mortality is terribly high, amounting to 50 per cent.

The following abstract from my table shows the mortality in the different methods of treatment adopted, together with the cause of death as ascertained by post-mortem examination:—

1. Colon opened in the groin .	16	died	11
2. ,, ,, loin .	3	,,	2
3. Puncture	17	,,	14
4. Coccyx resected	8	,,	5
5. Perineal incision or dissection	39	,,	14
6. Communication between rectum and vagina	14	,,	1
7. Miscellaneous	3	,,	3
	100		50

Of course, it is not right to compare the death-rate following upon Littré's and Amussat's operation with that resulting from operations *in situ;* for it must be remembered that in the majority of cases in which the colon was opened, the operation was only undertaken as a last resource after failing to find the bowel in the perinæum.

CAUSES OF DEATH.

1 died from bronchitis.
1 ,, convulsions.
3 ,, erysipelas.
2 ,, stricture of œsophagus.
10 ,, unrelief.
14 ,, peritonitis.
19 cause of death unrecorded.

Failure to give relief and peritonitis figure as the cause of death in the great majority of cases.

Of the ten cases that were unrelieved, one was a case of Amussat's operation, in which the surgeon failed to find the bowel, and, in the remaining cases, either an incision or a puncture had been made without success.

In three of these, a subsequent post-mortem showed that the bowel could have been easily reached by careful dissection, a puncture only having been tried, and in two other cases, in which incisions were made, a little more dissection would have found the bowel. While in the five remaining cases, from the height at which the bowel was obliterated, it is unlikely that any local operation would have proved serviceable.

Of the cases that died from peritonitis, three were subjected to Littré's operation, one was a case of Amussat's, five were cases of dissection and puncture, in one the bowel was ruptured by the finger, while in the remaining five, peritonitis followed a simple puncture.

Although, perhaps, it is dangerous, as a rule, to compare the death-rate following any particular method of treatment, apart from the details surrounding each individual case, particular attention should be called to the high rate of mortality following simple punctures.

After condemnation of this unsurgical proceeding by almost every writer on the subject, it might seem unnecessary here to refer to it; but, when it is known that this treatment is still largely adopted, it is necessary to point out in the clearest possible manner the danger of this proceeding, and to explain on anatomical grounds the reason for the high rate of mortality following such a course.

In a certain number of cases the immediate result of the puncture has been successful, the trocar having entered the imperforate rectum and given relief. In a considerable number, however, a mere dry tapping results, while in others, although temporary relief is afforded, acute peritonitis rapidly supervenes.

When we examine specimens of anal malformations preserved in our museums, the mortality that follows upon these blind perforations becomes readily explained. As an example, a specimen which I dissected and showed at the Pathological Society[1] in 1879 may be taken. In this specimen the anus ended in a cul-de-sac three-fourths of an inch deep, while the rectum terminated in a blind extremity one inch from the anal outlet. The peritoneum continued over this bulbous extremity so as to cover its anterior two-thirds, and was then reflected over the bladder. If the finger of one hand was put into the anal cul-de-sac, while the finger of the other was placed in the rectal cul-de-sac, the fingers nearly met, being only separated by four layers of tissue—viz., the muscular coats, together with the mucous lining forming the walls of the cul-de-sacs, and a double layer of peritoneum dipping down and reflected between the two. The course taken by a trocar, if used in such a case, would be first through the anal cul-de-sac into the peritoneal cavity, and out of this again into the rectum. It will thus be seen that, if the canula slipped, or was withdrawn, the course of the meconium would certainly be into the peritoneal cavity.

We have only to refer to our anatomical museums, and plenty of specimens will be found showing the course taken by the trocar in these punctures, and such specimens will also disclose the ease with which a trocar will fail to puncture the bowel, and perforate the peritoneal cavity, notwithstanding that the termination of the dilated rectum is within easy reach.

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[1] Path. Soc. Trans., vol. xxxi. p. 112.

St. Thomas's Hospital.[1]—Cul-de-sac of rectum about an inch from anus, which is well formed. An attempt appears to have been made to puncture the intestine, the track of the instrument being evident. From being directed too much backwards it injured, and passed between, the muscular and mucous coats.

St. Thomas's Hospital.[2]—Imperforate anus in the male. Anus is perfectly formed, a puncture being made into a cul-de-sac of the rectum, distant one inch. A large mass of extravasated blood had raised the mucous membrane protruding it into the bowel.

Guy's Hospital.[3]—Imperforate anus. It had been punctured, and the trocar passed into the recto-vesical pouch as indicated by a glass rod. The rectum is less than an inch from the anus, but the trocar passed in front of it.

St. Bartholomew's Hospital.[4]—Well-marked anus; a quarter of an inch between it and a moderately distended rectum. A trocar during life failed to give relief, having passed by the side of the rectum and not entered it.

St. George's Hospital Museum.[5]—Two specimens of imperforate rectum within easy reach, which a trocar puncture failed to find. Many similar cases are recorded in my Table.

In rare cases, such as a specimen in the

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[1] Path. Museum Specimen No. 95. [2] Specimen No. 89. [3] Specimen, 1883. [4] Specimen No. 21. [5] Specimen, Nos. 66 and 68, S. 9.

College of Surgeons, in which a mere membranous septum occludes a bowel of otherwise normal calibre, it might be quite proper to perforate the obstruction with a narrow knife; but in the majority of cases to thrust a knife or trocar blindly through the anal cul-de-sac is a hazardous proceeding.

Treatment.—Being convinced of the danger and frequent futility of making mere punctures with a trocar in the hope of finding the meconium, the question arises as to what first should be done. I would recommend that the infant be placed on its back in the lithotomy position, and that a careful examination of the parts should be made. It may at once be apparent that there is no trace of an anus, or, at the most, only a shallow depression. On the other hand, if the anus be perforate the cul-de-sac may be exposed by an ear speculum. In by far the larger number of cases the cul-de-sac, if present, will terminate at a distance of half an inch to an inch from the surface. The question may here arise, as to whether the rectum is more likely to be within reach, if the anus be completely absent, or if its cul-de-sac is well marked. Now, I think we can fairly say, with reference to this question, that the presence or absence of the anus is of no certain assistance in forming a clue as to the probable position of the blind extremity of the rectum. It has, however, already been mentioned that the cases are rather more favourable in which no anal cul-de-sac exists; for, in such circumstances, the bowel may be close beneath the skin. Whether a cul-de-sac be present or not, in the larger number of cases the blind extremity of the rectum is within an inch or an inch and a half of the anus, and is, therefore, within comparatively easy reach, and is to be sought for in the curve of the sacrum lying against that bone.

If the bowel be not immediately beneath the skin of the perinæum, the great difficulty experienced in the search to find it consists in the extreme smallness of the parts concerned, and the consequent difficulty of mechanical manipulation, and, even when found, it is difficult to make the opening sufficiently free to admit of the unrestricted flow of the meconium.

If the bowel terminates immediately beneath the skin, it will suffice to make a longitudinal incision sufficiently free to admit of a moderate-sized little finger. If, on the other hand, there is no indication of the immediate presence of the bowel, the incision may be carried back to the tip of the coccyx, or, when the anal cul-de-sac is present, a probe-pointed knife should be introduced to the bottom, and the intervening tissues between it and the tip of the coccyx divided, care being taken to cut as nearly as possible in the middle line to avoid hæmorrhage.

I have frequently adopted this plan, when operating for rectal cancer in the adult, and it is surprising the extent to which the parts are unfolded, and room gained for manipulation. After this incision, bleeding vessels should be at once tied. The bowel may now be carefully sought for, by continuing the dissection slowly upwards in the middle line, while I have found the dissection considerably facilitated by holding the sides of the incision apart by artery forceps, the part being frequently examined both with the eye and finger, for indication of the bulging bowel.

It must be remembered that the termination of the gut nearly always lies in the hollow of the sacrum, so that the dissection should be kept close to this bone, which thus serves as a guide. As already stated, there is great hope that, by such a dissection, the bowel will be found within an inch or an inch and a half of the surface.

Opinions are divided whether an attempt should be made to draw the bowel down after its exposure, and, when opened, to stitch its mucous edges to the cutaneous wound, or, whether the surgeon should be content, after freely incising it, and giving exit to the meconium, to leave it *in situ.* Many operators, especially of the French school, believe the tendency to contraction of the newly formed anus is much lessened by the mucous lining of the new channel being continued to the surface. Doubtless this is true to some extent, but if the bowel be any distance from the outlet, not only is it impracticable to draw it down, but, even if this be accomplished, the sutures uniting it to the skin ulcerate through, and the bowel again retracts.

On the other hand, if the bowel is close beneath the surface, it will of itself, in the process of healing, be drawn towards its normal position. This stitching of the bowel has dangers of its own by preventing the free escape of the discharge, which is pretty sure to be freely secreted, and thus become a source of purulent infection. On the whole I agree with Thorn,[1] who, in his interesting paper, states that it is better to make no attempt to draw the bowel down.

We will now suppose that the section has been carried to a depth of an inch and a half or two inches without finding the bowel. The question then arises as to whether search should still be continued, and, if not, what should be done. Verneuil[1] advocates resection of the coccyx as giving increased room for exploration. His two cases (5 and 6) are certainly very encouraging, for, after failure of the ordinary incision and dissection, he succeeded by resection in finding the bowel, and successfully establishing an outlet. I have never had an opportunity of seeing this manœuvre practised, but after reading Verneuil's paper, I should certainly be inclined to give this plan a trial before opening the gut in the groin. The operation is performed by carrying the incision back to the tip of the coccyx, then detaching the soft parts from the bone, which is cut across with a pair of curved scissors.

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[1] Toledo Med. and Surg. Journ., vol. iv. p. 454.

If, after careful dissection *in situ*, the operator fails to find the bowel he may at once proceed to open the colon, or may wait twelve hours or so on the possible chance of the straining efforts of the child bringing the bowel into view, since the resistance of the tissue had been partly removed by the operation.

If it be decided to open the colon, this may either be accomplished by operating in the loin (Amussat), or in the groin (Littré). The great majority of surgeons select the latter, and it appears to me with good reason. In my Table only four cases of Amussat's operation were recorded, and only one of these was attended with success. It was in the practice of my colleague, Mr. Morrant Baker, who has given a full and interesting account of the case in the Clinical Society's Transactions.[1] The objection to performing Amussat's operation on an infant is the difficulty of finding the colon. It is, comparatively speaking, ill-developed in the infant, and its course more frequently deviates than in the adult, while the relatively large size of the infant kidney limits the space in which to operate. On the other hand, the bowel is found with comparative ease in the groin, and is also opened nearer its natural termination. Some difference of opinion has arisen among surgeons as to whether the opening should be in the right or left side. Some good authorities have advised the operation on the right side, owing to the frequency with which the sigmoid flexure (the part which it is desired to be opened) is curled over in this direction. Every anatomist is aware that this is frequently the case, nevertheless, I am sure that such a disposition should be regarded as exceptional, and the operator is more likely to open the sigmoid flexure on the left than on the right side. The surest method of exposing the large intestine in the groin is to commence the incision at a point opposite the junction of the middle with the outer third of Poupart's ligament. The incision should be within half an inch of the ligament, following the same course, and one and a half inches in length. The skin and muscular layers being evenly cut through, the fascia transversalis and peritoneum may be pinched up together, and a small opening made, through which a director should be passed, and the two divided with one incision. If there be a doubt as to whether it be the small intestine presented in the wound, this can generally be ascertained by drawing slightly outwards the coil, which will come readily enough, if it be the small intestine, while the clearly defined mesentery will also show that it is the wrong bit of bowel, and must be pushed back. On the other hand, the large intestine cannot be so readily drawn out, and its mesentery, if it have one, will be found attached to the left side.

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[1] Bull. Soc. Chir. Paris, 1878.

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[1] Clin. Soc. Transactions, vol. xii. p. 240.

A portion of the large intestine being brought into the wound, it may be fastened there. In performing this part of the operation, it is important that the size of the curved needle employed should be small in comparison with the thread used, in order that the thread may block up the puncture made by the needle in the bowel. Probably the best way to fix the bowel in the wound is to employ the same method as is used in fastening the stomach in gastrostomy, that is, to pass the sutures through the skin and parietal layer of peritoneum, then transfixing a portion of the bowel, after which the needle again passes through the parietal peritoneum and skin; in this way the bowel may be fixed by two or three loops of thread on each side of the incision. The part exposed is thus cut off from the abdominal cavity, and may be opened with scissors.

It has occasionally happened, after an operation has been successfully performed in the groin, that the idea of establishing an outlet in the normal situation has been entertained. The scheme consists in passing a bougie or catheter by the groin opening into the cul-de-sac of the bowel below. And if this can be pressed down in the pelvis to cut down upon it from the perinæum. If after exploration it can be ascertained that the bowel can be made to descend within a short distance of the perinæum, such an operation may be justifiable. On the other hand, if reference be made to Mr. Owen's paper,[1] it will be seen that in two cases in which this attempt was made death resulted. In one of these cases the bowel could be readily pushed down, so that with one finger in the anal cul-de-sac and another passed into the rectum by the groin, a very thin layer of tissue appeared to intervene. This was perforated and an opening established, but the child died of acute peritonitis. At the post-mortem the upper cul-de-sac was found ensheathed in peritoneum.

In the female, when the bowel communicates with the posterior wall of the vagina, the prognosis is favourable, not only as regards risk to life, but as to the probability of effecting a complete cure. Provided the fistulous communication be of sufficient extent to allow a free passage, there is no necessity for an immediate operation, which may be advantageously deferred for a few months, when the parts will be relatively much larger.

It is not generally desirable to delay operation for a longer period, since the necessary treatment for maintaining the patency of the new anus is more easily carried out in an infant than in an older child. The operation which has given the most satisfactory results is performed as follows:—The infant being placed in the lithotomy position, a strong bent probe is passed through the fistulous opening, and made to project towards the perinæum in the natural site of the anus. Sometimes it is found that the rectum terminates in a cul-de-sac just beneath the skin, but more commonly the fistulous opening in the vagina represents the actual termination of the rectum, fibrous tissue occupying the parts between it and the cutaneous surface. In the former case the operation is easy, but in the latter a careful and prolonged dissection is necessary.

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[1] Harveian Lectures, 1879.

The fistula in the recto-vaginal septum can either be left to itself for a while, to be closed by a subsequent operation, or the whole operation may be completed at once. If the communication be small, and a free outlet be established in the proper position, the fistula will often close of itself. If, however, it fails to do so, the edges may be pared, and brought together by sutures.

The subsequent treatment of cases of imperforation is of the utmost importance, great care and trouble being required to maintain the opening when made. There can be no doubt that, in a large number of cases, the difficulty results from insufficiency of the original opening, or if any considerable extent of tissue intervene between the skin and the bowel, the tendency of this portion of the canal to contract may cause an opening which was at one time sufficiently large to become too small for the passage of fæcal material. It is not necessary again to discuss whether the tendency to contract can be prevented by stitching the margin of the bowel to the skin at the time of the operation. No better means is known of overcoming this tendency to contract than by the frequent use of a bougie. This should be made of vulcanite, tapering slightly, and of about the size of a No. 18 English catheter.

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For the first few months it should be passed daily, its use may be then gradually reduced to once a week, or even less, but this should be continued so long as there is any tendency to contraction. In the event of the bougie having been neglected, or the outlet having become too small for evacuation, the strictured part should be divided by free posterior incision.

The constant attention necessary to maintain the patency of the opening is exceedingly trying to the mother or attendant of the child, but this perseverance may be well repaid, for it would seem that even in bad cases, as the child grows, the tendency of the opening to contract gradually lessens, and may at length entirely disappear.

I have recently had the following very puzzling case (13) of imperforate anus under my care. An infant, 6 weeks old, was brought to the hospital for a tumour that had appeared a week previously. On examination, I found a bright red swelling, the size of a walnut, projecting between the labia. The swelling appeared to contain fluid. On closer examination, the swelling proved to be the bladder turned completely inside out, and the fluid behind collected in a dilated ureter. After a little search, the orifices of the ureters were found. Upon passing a probe into one of these, half an ounce of urine jetted out, and the tumour collapsed into an empty bag. By means of two probes, I pushed the whole of this everted bladder back again through the urinary meatus. It was then discovered that the anus was nearly imperforate, the aperture only admitting a small probe. Small quantities of liquid fæces had come through this, and no doubt the con-

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stant straining efforts of the child had been the cause of the extrusion of the bladder. I enlarged the anal outlet, since which time there has been no further prolapse of the bladder.

For further information upon the subject of rectal malformation the reader is referred to the admirable paper of Mr. Curling[1] in the Royal Medical and Chirurgical Society's Transactions, also to Bodenhamer's[2] classical work, in which he will find the whole subject completely reviewed.

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[1] Med. Chir. Transactions, vol. xliii. p. 270.

[2] Treatise on the Pathology and Treatment of Congenital Malformations of Rectum and Anus, by W. Bodenhamer, New York, 1860.

CHAPTER III.

HÆMORRHOIDS.

HÆMORRHOIDS, or Piles, have occupied the attention of authors from the earliest records of surgical history, for, not only is the disease one of the most common afflictions, but it causes pain and annoyance out of all proportion to the apparent magnitude of the disorder. It spares neither age nor sex, and from it no class can be said to be entirely free. It is, however, proportionately more frequent in the upper classes, and it must be regarded as one of the penalties attending too luxurious or sedentary a life. The active do not necessarily escape, for I have frequently seen the disorder in hard-riding hunting men, and in those who take other vigorous forms of exercise. So common indeed is some form of hæmorrhoidal disorder, that few altogether escape slight trouble from this cause during some period of their life, but many of these so-called transient attacks of piles are, I suspect, not really hæmorrhoidal at all, but owe their symptoms to the œdema and inflammation attendant on some excoriation or fissure.

Hæmorrhoids are divided into two classes—

1. External hæmorrhoids,
2. Internal hæmorrhoids;

a classification that has stood the test of time, for it is of great practical value. Piles are called external, when they affect the muco-cutaneous surface of the anal margin, and are outside the external sphincter. They are called internal, when the disease commences in the mucous membrane of the bowel within the sphincter. Certainly it often happens that internal piles of long standing become habitually extruded beyond the sphincter, and can be seen surrounding the anal outlet. Nevertheless, they are still internal piles in the clinical nomenclature, since they originate within the bowel, their protrusion being merely accidental.

Both forms of piles are frequently associated, and it may happen at times that there is a well-marked narrow line or sulcus between the two, but sometimes the line of separation is indefinite, the swelling extending in direct continuity from the one to the other, so that a tumour will be seen, the outer surface of which is covered by skin, the inner by mucous membrane. The difference in colour between the two forms of piles is well marked; the rose-red opaque tint of the external pile contrasting strongly with the shining vascular surface, either red or claret-coloured of the internal. The external pile being covered by a true skin has a somewhat rough, dry feel, while the internal is soft and velvety in texture, similar to the mucous membrane. An exception to this rule must be made in some cases of old prolapsed internal piles, for here their covering becomes dry and thickened, having more the appearance of skin than mucous membrane.

In an earlier part of this work the anatomy of the rectal blood-vessels has been duly considered, but I may here repeat that the arteries in the lower part of the rectum running in a longitudinal direction beneath the mucous membrane, terminate in capillaries, from which the veins take their origin. These veins commence in a plexus round the lower half inch of the rectum, emerging from which plexus, they run upwards by four or five main trunks, eventually merging into the inferior mesenteric, thus forming part of the portal circulation. It is in morbid states of these terminal blood-vessels that the hæmorrhoidal condition originates.

Etiology of Piles.—Some authors regard this disease as often of an hereditary nature. Without for a moment believing that the actual piles are inherited, I think it not unlikely that such predisposing causes as a weak or deficient sphincter muscle, abnormal thinness or delicacy of the skin and mucous membrane, or even deficiency in thickness in the coats of the vessels, may be a transmitted tendency, increasing the liability to piles.

Regarding as I do this want of proper support to the terminal veins as the chief predisposing cause of their abnormal development, let us consider some of the conditions under which such natural deficiency may become transformed into actual disease.

When subjected to undue pressure from within, veins, if unsupported, will gradually dilate, and this dilatation does not merely affect their calibre, but actually gives them an increased length, causing them to become curled and convoluted. This phenomenon is readily observed in the varicosities of the saphenous vein, for here may sometimes be seen a vein which, from long-continued internal pressure, has become so coiled and convoluted that, if stretched out, it will measure several times its original length.

As with the veins of the leg, so is it with those of the rectum, for they too become lengthened and convoluted under continuous pressure from within. It thus comes to pass that the normal small venous plexus that naturally exists around the anal margin, just within the bowel, becomes distended and tortuous. Another effect of intra-venous pressure about the rectum is to cause minute vessels, or even capillaries, to develop into thin-walled vessels or cavernous spaces of considerable size.

In piles, it is not the veins alone that undergo this hypertrophy, for it often happens that the arteries also have an abnormally large diameter. The enlargement of the arteries is probably secondary to the venous dilatation. This secondary dilatation of arteries which throw their blood more or less directly into dilated veins, has not received much attention at the hands of pathologists. Nevertheless, it is a noticeable fact, and is especially well illustrated in aneurysmal varices about the scalp. In one such instance I have seen the anterior branch of the temporal artery feeding one of these tumours dilated to the size of the radial.

In old-standing cases of piles, both the mucous membrane covering their surface, and the connective tissue in their interior, share in the general hypertrophy, thus producing more or less of a firm and permanent tumour. The abnormal pressure within the hæmorrhoidal veins may be traced to several distinct causes. Obstruction of the circulation, either through the heart, lungs, or liver, will cause such pressure, and for this reason, piles frequently form a complication both in cirrhosis of the liver and obstructions to the venous system situated in the chest cavity; consequently, at times piles are but a symptom arising in heart disease, or even in diseases of the lungs when the flow of blood through them is obstructed. A constantly overloaded colon, abdominal or pelvic tumours, obstructing the return of blood by pressure on the mesenteric veins, has the same effect. A gravid uterus thus frequently becomes the original cause of hæmorrhoidal distension. But here I must pause for a moment to say that abdominal tumours giving rise to piles do so by compression of the mesenterics, or some portion of the portal circulation, and that interference in the circulation through the iliac veins plays little part in causing hæmorrhoidal dilatation. (See page 5.) The veins in cases of obstruction gradually dilate from what may be called passive pressure; that is, the blood cannot pass away from the veins as rapidly as they are filled from the arteries. If the obstruction be only of a temporary nature, such as that resulting from pregnancy, the veins may recover their normal calibre when the cause is removed.

Displacement of the uterus unconnected with pregnancy is a not uncommon cause of piles, for such displacements exercising an undue pressure on the rectal wall, lead in time to dilatation of the venous system below. A rectum kept abnormally and unnecessarily dilated is another source of hæmorrhoidal trouble. Those who do not carefully attend to the calls of Nature, should remember how important a part habit plays in physiological action. A few weeks or months of negligence in this respect will lead to such irregularity of defecation that it may only take place after intervals of several days. Accumulations thus produced in the lower bowel lead to injurious pressure on the venous system.

Duly bearing in mind such passive causes as have already been enumerated, there will still remain many cases of piles which appear to owe their origin to some more active dilatation of the veins.

The rectal and anal plexuses being deficient in valves, any pressure on the blood in the veins of the pelvis and abdomen by the action of the abdominal muscles will be directly transmitted to them, for the pressure of a fluid is equal in all directions. Let us consider how differently this pressure will act as regards the internal abdominal veins, and those about the anal outlet. In the one case, the veins of the abdomen and pelvis are subjected to an external pressure from the squeezing of their walls by the abdominal viscera ; but, in the other, the terminal veins of the rectum and anus being outside the abdominal cavity, and therefore removed from the compressing force, are affected in an exactly opposite direction, being dilated by internal blood pressure. This dilatation of the hæmorrhoidal plexus by pressure of the abdominal muscles can be readily demonstrated by telling a patient to strain while the piles are prolapsed, when they can be at once seen to swell up from venous engorgement. In a healthy rectum, undue dilatation is prevented by the action of the sphincter muscles, but, if these be weak, or the veins protruded beyond their influence, there is nothing to counteract the dilating force which, if frequently applied, will ultimately cause the permanent varicosity of the veins.

In the foregoing facts we have a ready explanation as to why piles so frequently complicate enlarged prostate, stricture of the urethra, phimosis, &c., and, above all, we are able to understand how prolonged and violent straining at stool may become a cause of hæmorrhoidal disorder.

Some persons are in the habit of taking purgative medicine for the relief of supposed constipation. It is quite astonishing the amount of pills and nauseous mixtures which are sometimes habitually consumed to relieve a torpid bowel. Such persons, too, concentrate a morbid amount of attention to the action of their bowels, and will often sit with a newspaper in their hands for considerable periods in a closet, with frequent straining to complete a motion. Nothing can be so injurious, or more certainly tend to hæmorrhoidal prolapse than such a procedure. At these times the sphincter is partly or completely relaxed, while the veins and mucous membrane engorged with blood from abdominal pressure, are forced downwards in a distended condition. Considerable and permanent prolapse is thus gradually established.

An explanation given by Niemeyer[1] as to why hæmorrhoids should frequently affect those who habitually exceed in eating and drinking is, that during digestion there is an increased flow of fluids from the intestines into the intestinal veins. It is known that the engorgement of the portal vein from this cause obstructs the escape of blood from the splenic vein, and consequently the spleen enlarges every time that digestion goes on. It will follow from this, that from excess in eating and drinking the fulness of the portal veins is increased and more permanent, and that, consequently, other veins which open into the portal system may dilate, and from repeated engorgement become permanently enlarged.

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[1] Practical Medicine, vol. i. p. 586 (1871).

External Hæmorrhoids.—All swellings about the anal orifice are commonly designated by this term. It is, however, most necessary to recognize the varieties of external piles as having a very important bearing on their treatment. I propose to make the following three divisions:—

1. Thrombotic pile, dependent on an inflamed or ruptured vein.

2. Œdematous pile, due to a swollen and inflamed condition of one or more of the normal muco-cutaneous folds.

3. Cutaneous pile, due to flaps and tags of skin consisting of permanently hypertrophied folds of integument.

In a strict sense, the two latter divisions are not hæmorrhoidal at all. Nevertheless, they form such a common clinical feature, and are so universally spoken of as hæmorrhoids by practitioners, that I prefer to consider them under the old appellation.

I. *Thrombotic Pile.*—Simple dilatation of the anal plexus is no abnormal condition, and always takes place to a greater or less extent in every act of defecation or straining. In any operating theatre it may be constantly observed in patients in the lithotomy position, that, when straining to vomit, a dark ring of dilated veins becomes visible around the anus, which quickly disappears upon cessation of the straining effort. Of course, this external plexus may become permanently dilated, but I do not think that it ever does so without the internal plexus being similarly affected, in which case it forms but a complication to internal piles. It sometimes happens that whilst straining at stool the patient will feel a slight sudden pricking sensation, and observe soon afterwards a small lump at the anal margin, which is seldom bigger than a good-sized currant. If is often very hard, indeed almost like a foreign body beneath the muco-cutaneous surface. Sometimes this little tumour will quickly disappear, at others it will remain a long time without giving trouble. Occasionally, however, it will be followed by much swelling and inflammation, or even lead to the formation of a small abscess. If the little tumour be examined, it will be found to be covered by slightly reddened true skin, or if situated nearer the verge of the mucous membrane, it shows a dark-blue colour through the thin muco-cutaneous integument. Pressure does not cause it to disappear. At first it is not very painful, but it may subsequently become so. Should the little swelling be cut into, it will be found to consist of a drop or two of coagulated blood, doubtless arising from the subcutaneous rupture of a small vein, caused either by direct straining, or straining combined with the pressure of a hard mass of fæces.

I was once consulted by a young man in whom the symptoms appeared after a jumping contest, and in his case it was the result of a sudden intra-venous pressure caused by the violent contraction of the abdominal muscles in the act of springing. These little ruptures are liable to recur, and often produce a certain amount of irritation, leading to hypertrophy of the anal fold in which they are situated, thus forming one of the causes of the third variety of external piles to be presently described.

Apart from the little tumour which results from this blood extravasation, I feel confident that occasionally coagulation takes place within a dilated venous pouch; for it may sometimes be observed after incising these little swellings, that the clot is contained within a perfectly smooth-walled cavity, exactly resembling a dilated venous pouch.

The cause of this coagulation within the vein may be due to partial laceration of its coats, or, as I fancy more frequently occurs, it is really secondary to some inflammation spreading from a crack or fissure in the muco-cutaneous surface.

II. *Œdematous Pile.*—The second variety forms a considerable proportion of what is commonly called an "attack of the piles." Such attacks vary greatly in degree. In slight cases the patient complains of little more than irritation of the part, while in others, especially if the inflammation extend to the venous plexus, acute pain may be experienced, with considerable constitutional disturbance. I will consider the slighter cases first, for in these will be found the explanation of the severer forms.

A patient will present himself complaining that he "has got the piles." We shall find, upon questioning him, that the trouble commenced a day or two previously with a sense of irritation and heat in the part. The irritation has now passed on to a sensation of actual pain, especially on attempting to pass a motion.

He will also be conscious of a swelling or fulness about the rectum, and it will generally be found, upon further inquiry, that he has had such attacks before, but that they have usually passed off in a few days, leaving no permanent trouble.

In the slight case I am now considering there will be no constitutional disturbance. Upon examining the part, a small swelling may be seen, perhaps the size of a filbert, at the anal margin, and upon further investigation it can be clearly observed that the swelling consists of a fold of the muco-cutaneous surface in an inflamed and œdematous condition. Upon touching this fold it is perhaps tender, but does not feel hard, as in cases where a blood-clot has formed.

If we now gently evert this fold, so as to expose its mucous aspect, there will frequently be found, just at the junction of the skin of the mucous membrane, a little superficial excoriation or crack.

If, as not infrequently happens, there be two swollen folds at the anal margin, then the fissure or excoriation will generally be found at the bottom of the sulci between the two. If the broken surface be touched by the finger, it is very painful.

Now, I believe in this crack or excoriation we have the key to the whole class of external piles which I am describing, and that the swelling or swellings at the anal margin are simply secondary to a slight inflammation started at the excoriated surface, the condition being exactly analogous to the swelling and œdema that is so often observed in the loose cellular tissue of the eyelid after slight cuts or injuries in its neighbourhood.

If patients be in good health the lesion quickly heals, and with it disappears the "external pile." It occasionally happens that the attack is much more severe, not only in its local manifestation, but by causing considerable constitutional disturbance. The general condition of the patient's health doubtless to some extent determines the severity of the inflammation, and here it may be noticed, as in other parts of the body, that a slight injury, that scarcely causes any trouble in the healthy, gives rise to extensive local inflammation in a constitution saturated with alcohol, or in other ways impaired. How often, for example, do we find that a small abrasion of the skin which in the healthy gives no trouble at all, will, in a brewer's drayman, or free liver, be followed by swelling and inflammation of the whole limb!

In such cases the pulse may be increased in frequency, the temperature raised, the mucous membrane of the mouth and tongue dry, while headache and want of sleep often complete the febrile symptoms. If the inflammation be considerable, the pain may be so great as to prevent defecation, notwithstanding a teasing sensation that the bowels require relief. There is often a desire to strain, which, if indulged in, only aggravates the pain; and it is surprising how so small a localized disorder will sometimes incapacitate a strong man for some days.

If the anus be examined during one of these attacks, one or two swellings will be seen, perhaps as large as a walnut, at the anal margin. At other times the whole anus is surrounded by a ring of swollen œdematous tissue, the thickness of the finger, drawn here and there into sulci. The swellings are situated in the loose folds of thin skin at the anocutaneous margin. If the swelling be excessive the mucous membrane itself may be involved in the œdema, and will be partly everted from the rectum. The swellings are often red and shining, and the part is so tender that the patient can scarcely allow himself to be touched. The swellings are larger in those who have long been liable to such attacks, for in these cases the anal folds are generally thick and hypertrophied, their swelling therefore when inflamed being proportionately greater.

Of course, when the inflammation is extensive, it is very probable that it will lead to secondary thrombosis in some portion of the superficial plexus, or the case may be complicated by internal piles.

III. *Cutaneous Pile.*—The third variety of external pile is a condition in which around the anus are found one or more tags or flaps of skin. Sometimes these appear to be little more than enlargements of the normal anal folds. In other cases they form thin flaps of considerable size, and are often pedunculated. If removed from the body and examined, they will be found to consist of a thickened muco-cutaneous surface with an interior, consisting of fibrous tissue, and some atrophied blood-vessels. I have no doubt whatever that these hypertrophied tags were originally the result of some chronic œdematous or inflamed condition of the anal folds.

They remain, in fact, as a permanent legacy after frequent attacks of swelling of the folds, as already described. These hypertrophied folds are especially common in those who suffer from rectal stricture, ulceration, or other chronic disorders of the part.

Such tags and folds look innocent enough when in a quiescent state, but when inflammation affects the part they swell up, quickly assuming an angry and formidable aspect.

From the foregoing remarks it will be seen that external piles are commonly but a symptom of some other disorder, but if we except all cases of internal piles, ulceration, stricture, &c., there will still remain a large number of cases in which the chief trouble arises from the swollen, inflamed condition of the folds, so that they form at least as essential a part of the disease as does the trivial lesion from which their condition originated.

The attacks are very liable to follow some error in diet. "A little dinner" at the club or in the City may often be traced as the starting-point of the trouble. It is very difficult to lay down any absolute rule as to what is meant by excess. The action of alcohol differs much in individuals, and is especially noticeable as regards its effects on the mucous membrane. Some habitually drink one or two bottles of wine daily at dinner without apparent detriment. Such individuals will wake in the morning with a moist, clean tongue, perfectly fresh for their day's work. In others, on the other hand, after only a glass or two, a restless night will ensue, the mucous membrane of the mouth, tongue, and fauces will be dry, as if the normal secretion had been arrested or diminished. I believe that this condition of the mucous membrane of the mouth is but an indication of what is prevalent to a greater or less extent in other parts of the alimentary tract. At least it would certainly seem so as far as the colon and rectum are concerned, for there is generally constipation, showing a want of moisture about the lower bowel.

In these circumstances, too, the mucoid glands about the anus have a deficient secretion, the parts being thus rendered abnormally dry. In this condition, when a hard and constipated motion is forced through the part, the anal folds are liable to be cracked and excoriated, just as the muco-cutaneous membrane of the lips will readily crack when dry. The irritation of such cracks and excoriations leads to the secondary swelling of the neighbouring folds.

The *treatment of external piles* is generally a very simple matter, seldom demanding operative interference, which should be avoided if possible. Wounds in the muco-cutaneous surface do not heal so readily as on the mucous membrane, and are apt without care to degenerate into an ulcer difficult to heal. If the pile consist of the first variety—that is, a little hard lump of clotted blood forming a tumour in one of the anal folds—it will generally disappear without causing trouble if the bowels be kept gently opened and the parts made supple by the application of a simple ointment (ten grains of calomel to the ounce of vaseline). If, however, the swelling becomes very painful, and the part inflamed, immediate relief can be given by transfixing the little tumour with a sharp knife, and enucleating the contained clot, the part being subsequently treated with a warm poultice. The second and most common variety of external pile—that is, where there is a slight inflammatory condition affecting one or two of the anal folds secondary to some superficial crack or excoriation—can be quickly cured by keeping the motion soft for a few days by any of the prescriptions recommended on page 88, while the red oxide of mercury ointment, two drachms to the ounce of vaseline, or the subsulphate of iron ointment acts admirably as a local application. The parts should be thoroughly bathed with lukewarm soft water, night and morning, after which the ointment should be applied. Should, however, the inflammation be considerable, or complicated by internal piles, the treatment advocated on page 92 must be adopted.

In the last variety, where the disease consists of permanently hypertrophied tags and folds, so long as they cause little trouble and give rise to no symptoms, they had better be left alone; if, however, they are painful, and liable to become inflamed, they ought to be removed. This should always be done with the knife or scissors, and not with the ligature, and requires some care in its performance, for if too much be removed the part is liable to become unduly contracted. I am in the habit of cutting off all excrescences which are at all pedunculated. Otherwise I cut off half or two-thirds of each prominent projection, which is quite sufficient, for the cicatrization of the wound obliterates the remainder.

If external piles be complicated with internal, the former may be snipped off at the same time that the latter are tied. When the external tumours are large and continuous with the internal pile, it is a good plan partly to dissect back their muco-cutaneous covering, and then, after cutting a deep groove, they may be included in the ligature.

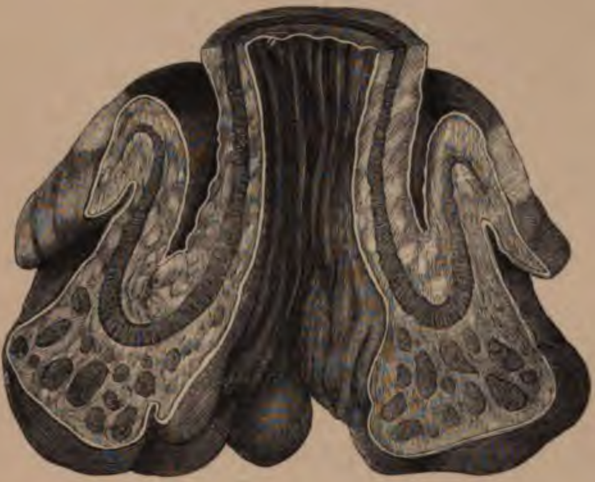
Internal Hæmorrhoids.—This form of disease is of a graver nature than the external variety, with which, however, it is frequently complicated. Internal hæmorrhoids are the result of a morbid condition of the blood-vessels, terminating in and beneath the mucous coat. The terminal venous plexus is normally situated just within the anus—that is to say, immediately above the junction of the mucous membrane with the skin. In hæmorrhoidal disease, especially of long standing, the dilated plexus may extend considerably higher up the mucous membrane, which in itself has more or less a tendency to prolapse.

Two well-marked varieties of internal piles may be recognized. The type of the one (the capillary hæmorrhoid) consists of a vascular area of small vessels, situated superficially in the mucous coat; the type of the other (the venous hæmorrhoid) consists of a varicosity of several large veins in the submucous tissue, forming considerable tumours, covered by mucous membrane. It must not be understood that there is always a well-marked distinction between these two varieties, but it is sufficiently common to admit of frequent recognition.

It might be supposed that these forms were but different stages of the same disease. They probably are so to a limited extent, and a condition which was originally disclosed as a superficial vascular area, may in time be complicated by a varicosity of the deeper veins. Nevertheless, it will often be found that the piles consist of large varicose veins, without undue vascularity on the surface of the membrane, while, on the other hand, a superficial bleeding patch of vascular tissue may exist for years, without abnormal dilatation of the deeper vessels.

In long-standing cases, and as the result of repeated

FIG. 3.



Hæmorrhoids complicated by "prolapse" (see p. 68, line 10).
From a specimen in St. Bartholomew's Hospital Museum.

To face page 68.

inflammations, the disease is something more than a mere dilatation of the vessels; for, partly by the obliteration of some venous canals, the thickening of the walls of others, and by hypertrophy of the intervening fibrous tissue, tumours are formed, containing a considerable quantity of solid material, the mucous membrane over the surface of which partakes of the general hypertrophy, becoming thickened and tough.

Internal piles are liable to inflammation, or even gangrene, conditions to be presently described; but, apart from these accidental complications, they are often the source of much ill-health, and even danger to life. This arises from a tendency to bleed—a tendency bearing no proportion to the extent of the local disease; indeed, I have seen it more persistent and severe from a small patch of vascular membrane, than in other cases where the whole circumference of the bowel has been involved in hæmorrhoidal dilatation.

When straining at stool, or even from the irritation of the passage of the fæcal mass, the bleeding commences. It may be so slight in amount as to be only noticeable as smudges on the paper, or it may be sufficient to cause a dripping for several minutes, while it occasionally escapes in little jets, sprinkling the pan with minute drops.

It is a matter of some interest to consider the source of this bleeding. The fact of the blood escaping in jets has led many high authorities[1] to regard it as arising from some arterial twig. With due deference to such eminent authorities as Brodie and Van Buren, I am of opinion that they are mistaken, and I do not believe that it ever comes from the arteries, but that the jet is caused by its being forced as a regurgitant stream through a small rupture in a vein by the powerful pressure of the abdominal muscles. If it really came from an artery, why should the jet only appear when the abdominal muscles act?

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[1] Brodie's Lectures, vol. iii. p.561. Van Buren, Diseases of the Rectum, p. 31.

Undoubtedly in numerous instances the hæmorrhage is of the nature of an oozing from soft vascular patches of the mucous membrane, for it often happens when examining these cases that even the friction of the finger will immediately cause blood to exude. In some instances, however, this bleeding arises from an actual opening through the mucous membrane into a vein. In a patient (Case 14) at St. Bartholomew's Hospital, who was reduced almost to death's door by a hæmorrhage that had existed for months, I observed on examining the part that at the summit of one of the piles there was a little adherent clot of blood, on removing which I could distinctly observe a small circular opening readily admitting a fine probe into a venous channel. I remember another instance (Case 15) of a somewhat similar kind. A patient had had bleeding for some days accompanied by a slight pain, and a small swelling in the anal neighbourhood. The bleeding was pretty free, and came on each time upon straining. On examination I found a little swelling beneath the muco-cutaneous surface, on the summit of which was a small blood clot. On wiping this away, a small orifice could be seen from which blood at once commenced to ooze. When the patient strained the oozing was immediately changed to a fine jet. I placed a little pellet of cotton-wool soaked in subsulphate of iron solution over the bleeding orifice, keeping it in place with a larger pad retained by the perineal band, the bleeding at once ceased, and the patient never had any return of it. Van Buren[1] also mentions the case of a young lady who had suffered from severe hæmorrhage from the bowel. On examination he found a well-marked venous pouch, in which a round hole, as though made by a punch, could be seen leading into a vein.

Loss of blood, if only occasional and limited in amount, causes no trouble, but its deleterious influence becomes evident when the bleeding is persistent or large in quantity. The amount lost daily may be small. Yet if long continued it becomes a common though unsuspected cause of ill-health. This appears to be specially the case in young men actively engaged in business or professional careers. Working, as is often the case, fully up to the level of their physical capacity, any extra drain on the vital resources is quickly reflected in their mental and physical condition.

Without a patient having any obvious or tangible disease, or, indeed, really feeling ill, he may be in a state best described as that of never feeling really well. There is all the difference between merely living, and having a sufficient superfluity of vigour to enjoy life; but yet this difference may be brought about by a very small deficiency in physical health. To wake in the morning with an increasing desire to sleep, to find the bath only tolerable by the addition of hot water, to be worried by every letter, and irritable with one's friends, to feel abnormally busy, but yet accomplishing little work—in fact, only to be in tolerable spirits after dinner and champagne, can scarcely be said to conduce to a pleasant life. Nevertheless, all such symptoms may depend on bleeding hæmorrhoids, as in the following case:—

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[1] Diseases of the Rectum, New York, 1880.

Case 16.—Mr. B., clergyman, aged 34, consulted me for piles. He had been troubled more or less for twelve years. At times, for many weeks together there was a dripping of blood after the morning motions; this dripping would sometimes last for nearly an hour. At other times bleeding, though not lasting nearly so long, would be even freer, escaping in little jets on straining at stool. Occasionally he would suffer pain in the parts, which pain would seem to depend upon atmospheric changes more than any other cause. Occasionally the piles would "come down," but not to any great extent, and could easily be replaced. On the whole, however, by far the most troublesome symptom was the hæmorrhage. For the last two or three years, during which time it had been more frequent, it had affected his general health. From being an active energetic man he had a disinclination to much physical exertion, and often felt tired and weary after a walk, which he would have considered nothing a few years before. He also had some mental depression, feeling worried and irritable from slight causes, at times feeling unable to perform his official duties. When I saw the patient he had a somewhat anæmic appearance, the bleeding having been very free the previous week. There was no albuminuria, nor could I detect any other cause, excepting the hæmorrhage, to account for his anæmic condition. By gently separating the sides of the anus, and directing the patient to bear down, the cause of his trouble at once became apparent. Upon a prominent and somewhat prolapsed fold were three distinct vascular bunches, looking almost like papillomata. The area of vascular mucous membrane converted into this papillary condition, was in each case about the size of a sixpence. The diseased part was of a very bright red colour, clearly distinguishable from the healthy mucous membrane at its margins. One of these tufts commenced to bleed directly it was touched by the finger, but all the bowel beyond was perfectly healthy.

Under ether, administered by my friend Mr. Cumberbatch, I tied the piles. With the exception of some slight trouble about passing the water, requiring the use of the catheter for a day or two, the patient made a rapid recovery, and returned to the country in a fortnight. Since the date of operation he has not had the slightest trouble of any kind with the rectum. Within a few months of the operation he completely regained his former strength, and is now as strong and healthy a man as he has ever been in his life.

In severe cases the loss of blood may be more obviously disastrous; the patient's complexion becomes tallowy, and the lips blanched; while there is breathlessness and palpitation upon the slightest exertion. In some the anæmia may become so extreme as actually to threaten life.

As an illustration I will mention the following case (17):—

E. G., aged 33, was under the care of my colleague, Mr. Langton, in Sitwell Ward, and owing to his kindness I was able to examine and watch the case. It proved to be an admirable example of the extreme danger to which a patient may be rapidly reduced by hæmorrhoidal bleeding, and the beneficial results of treatment. The patient was 33 years of age, and had been married for 15 years. She had always been in good health, and had no trouble with the rectum till five months ago. She then noticed one day for the first time that a little blood followed her motion. This recurred daily, the blood lost being in gradually increasing quantities. Lately it had amounted to "two or three table-spoonfuls" after each motion. She had no bleeding at any other times. She stated that five months previously she was fat and rosy. At the time of her admission she was fairly stout, but her whole body had a deadly waxy pallor, the lips being white and completely bloodless. The deadly white of the hands was only relieved by a slight dusky tinge under the nails. She could not take the slightest exertion without great breathlessness, and was quite unable to walk. Her voice was little more than a whisper; indeed, her general condition was such that it would appear that a fatal syncope might at any time come on. An examination was made. Directly the anal folds were separated, and the rectum exposed by the fingers, blood commenced to drip from the anus. This blood was extremely thin and watery, and seemed to have very little coagulating power. There was only a moderate prolapse of the mucous membrane. At one point blood could be seen oozing from a minute opening, which looked exactly like the open mouth of a small vein. This opening was situated at the summit of a prolapsed portion of the mucous membrane, having some dilated veins beneath. No operation was at that time performed, but she was kept absolutely in the recumbent position, and a suppository, containing two grains of subsulphate of iron, placed in the bowel twice daily. The suppositories, after a couple of days, appeared to arrest the hæmorrhage, while at the end of a fortnight, notwithstanding slight occasional oozing, the patient had so far recovered from her extremely collapsed condition as to render an operation a safe proceeding. The piles were tied, and the patient made a satisfactory though a somewhat slow recovery. Since the time of the operation there has been no more bleeding, and when the patient left the hospital she was quite an altered woman, having entirely lost the deadly pallor so characteristic of hæmorrhage; she no longer complaining of breathlessness, and was rapidly regaining strength.

Here is another case (18) of a very similar kind; and shows, too, how easily the true cause of severe symptoms may be overlooked.

A woman, aged 50, had been for long treated as an out-patient for anæmia without benefit. Supposing then that the uterine functions might be at fault, she attended at Dr. Godson's clinique, who, recognizing her disorder, kindly transferred her to my care. She gave the following history:—

She had been a healthy woman until a year and a half ago, from which date she commenced to lose her health. She slept badly at nights, was much fatigued after slight exertion, which caused breathlessness and palpitation. Her appetite was good, but she had a sensation of fulness and discomfort after meals. She had been getting much worse lately, and during the last few months had two or three attacks of fainting. She stated that a year and a-half previously she noticed for the first time blood in passing her motions. The quantity appeared small at first, but increased, and now she thinks she loses a teaspoonful or two each time on going to the closet. She had never had the slightest pain about the rectum, and believed that the loss of blood had nothing to do with her illness, which she attributed to the stomach and womb. On admission the patient was very feeble. Her complexion was tallowy looking, and her lips blanched, in fact, she wore the general bloodless appearance of extreme anæmia.

Upon separating the anal margin, and telling the patient to bear down, a portion of mucous membrane protruded the size of a nut. Upon this was a red vascular patch about as large as a sixpence. One-half of this patch had a whitish look as if it had been touched with nitrate of silver. On touching the patch a very small quantity of serous-looking blood exuded. The following day, under ether, I thoroughly dilated the sphincter, and found besides the patch described there were two somewhat smaller ones.

By means of a fine syringe I injected each of these patches with four drops of the following solution :—

Acidi carbolici, gr. vj.
Glycerini, ♏ xx.
Aquæ, ♏ xl.

The patient experienced only a trifling amount of smarting pain. She had no more hæmorrhage whilst in the hospital, and she gained strength rapidly, and was discharged in an immensely improved condition.

Patients sometimes say that they have been told that these frequent bleedings from the rectum are to be regarded as a safety-valve by which Nature seeks relief from plethora, and that the stopping up of this vent-hole might lead to internal engorgements, apoplexies, &c. All this is nonsense, and entirely unsupported by any scientific evidence. For my own part, I can certainly say that I have never seen the slightest harm arise from the stoppage of this drain, while I have frequently seen grave conditions result from its continuance. Some plausible colouring may be given to this view in the case of stout, red-faced, middle-aged men, who, dining at least twice a-day, take no more exercise than what is afforded by a cab-drive or billiard-table. It cannot be denied that such men make too much blood, a condition not to be cured by allowing it to run to waste from the rectum.

Indeed, the effect of this would be to excite the digestive and blood-forming organs already working at high pressure to make all the more. The vital organs are thus worked at express speed, and although at the time these florid individuals appear to be in vigorous health, a day of reckoning will surely come, and the blood-creating power, so long and constantly overtaxed, becomes prematurely deficient, resulting in a general break-up of the constitution.

The rational treatment for such cases is to stop the loss of blood, and then, by exercise and regulation of the diet, to adjust the blood supply to the normal requirements.

Another prominent trouble that arises from internal hæmorrhoids is their tendency to prolapse. This occurs in old-standing cases, and especially when the piles are large from interstitial growth. In these cases, besides the actual hæmorrhoidal tumours, there is considerable prolapse of the mucous membrane. There is also a loss of power by the sphincter, so that on the finger passing into the rectum little resistance is felt. The protrusion of the piles takes place at the time of a motion, and if only limited in extent may generally be drawn up by the action of the levatores ani; but it sometimes happens that, owing to the increasing amount of prolapse and the action of the sphincter, the protrusion requires to be replaced by the patient's fingers.

In some old-standing cases the annoyance of this protrusion is much aggravated by its tendency to escape out of season—an occurrence that may happen from some slight effort at an unguarded moment. Van Buren mentions the case of a barrister, whose piles would choose to come down at the moment of his rising to address a jury, and as he expressed it, "he could as soon square the circle as state a case under the circumstances."

Should this protrusion take place at some inconvenient time, so that the patient cannot at once return it, the piles are apt to become partially strangulated, owing to their neck being gripped by the sphincter sufficiently tightly to retard the return of the venous current, while the pressure is not sufficient to prevent the arterial flow. The part soon becomes swollen and œdematous, and is liable to be chafed with the clothing. From the pain and great swelling the patient may find himself unable, as on former occasions, to replace the mass, and is compelled to seek surgical advice.

Internal piles are liable to inflammation. At these times they become swollen and œdematous, and protrude, not only into the cavity of the bowel, but even through and beyond the external sphincter. When the swelling first takes place within the bowel, it produces a feeling of pain and discomfort, as if an imperfectly passed motion or a foreign body were present. The patient is thus induced to strain, by which means the piles become extruded. Thus piles which, when uninflamed, remain within the bowel, causing little trouble, will, from inflammation, form a large mass about the anus.

We have, then, two different methods by which chronic internal piles will assume an acute condition, the one the result of accidental strangulation, to which the swelling and inflammation is secondary, while in the other, inflammation of the piles is the primary condition, resulting in protrusion.

Diagnosis.—From what has already been said, and from the cases narrated, the general symptoms of internal piles can be gathered, and it only remains for an examination to make the diagnosis certain. With the exception of fistula, which patients seem instinctively to recognize, almost every other form of rectal disorder will be described by the sufferer as "the piles." The surgeon must therefore give but limited credence to this assertion, without an examination. Indeed, it is absolutely impossible to give a trustworthy opinion on any rectal disease without a careful and thorough examination. Such a statement might seem superfluous were it not that I have been frequently consulted by patients with so grave a disease as cancer, in whom valuable time has been lost by a course of treatment for piles, when an examination of the part would at once have revealed the true nature of the disorder. Doubtless in these cases some blame must be attached to the patient who has refused an examination from false modesty, but the practitioner is not without fault who prescribes for rectal disease without confirming the diagnosis by careful examination.

Before doing so, however, much valuable information may be obtained by questioning the patient. I find it best at first to allow patients to describe their symptoms without putting leading questions. I then proceed with the following catechism :—

Does the part bleed after a motion? Does any protrusion come down at stool? Is there any swelling round the anal margin? Do you have any pain after passing a motion, and how long does it last? Is there any discharge of matter from the bowel? Have you to strain much to pass a motion? Are the motions smaller than usual? Have you any diarrhœa? How long have you noticed the trouble? Have you been losing weight?

Discharge alone suggests the presence of a fistula, but if much straining be complained of in addition, the suspicion of stricture may be aroused. Pain is a prominent symptom in ulceration, though, of course, it is common enough in piles if extruded or inflamed. But the occurrence of bleeding at stool and protrusion from the rectum, whether accompanied by pain or not, is particularly suggestive of the presence of internal piles.

It must be borne in mind, however, that bleeding is a common feature in many forms of rectal disease, and it is rather from its character than its mere occurrence that piles may be suspected. If the bleeding comes on during or immediately after a stool, if it be unaccompanied by any pus or grumous discharge, and above all, should it sprinkle the pan in a little jet, it will most probably be hæmorrhoidal. The "descent of the body" at stool may mean a simple uncomplicated prolapse, or more rarely it is a polypus that thus comes down, but most commonly it will be found to be due to old-standing hæmorrhoids.

Having obtained some general information as to the kind of case we have to deal with by some such questions as I have suggested, all doubt as to the nature of the disease can be cleared up by careful examination.

The patient lying on the left side, on a suitable couch in a good light, with the head not too much raised, the left leg being stretched downwards, he should be directed to draw up the right limb as high as possible, the leg being flexed upon the thigh, and the thigh upon the abdomen. In this position the anus can be readily examined, and indeed it is the only position to examine a woman. In men, sometimes it may be an advantage to examine them kneeling, with the head lowered.

In examining a patient supposed to be suffering from piles, there can be no difficulty in making a diagnosis should the piles actually be down at the time of observation, but it generally happens when an examination is made that there is no protrusion to be seen.

Let us then consider, under these somewhat embarrassing circumstances, how to establish a diagnosis. It might seem a simple matter to pass the finger within the bowel, and to feel whether there may be hæmorrhoidal swellings present; nevertheless it is by no means easy to make sure of this by digital examination alone. If a surgeon has had considerable experience in rectal cases, he will be able to detect by the finger any abnormal redundancy of the mucous membrane, and occasionally, by a peculiar soft bulbous feeling, will recognize hæmorrhoidal dilatation.

Those who are commencing practice will gain little positive knowledge by the finger as regards the existence of internal piles. This is not to be wondered at, when it is remembered that the chief bulk of an internal hæmorrhoidal tumour is composed of dilated veins, which whilst within the bowel are comparatively collapsed and empty, only assuming the form of distinct tumours on protrusion from the anus, when they become engorged with blood from loss of external support.

Of course a digital examination must be made, to ascertain that there is no graver disease, such as cancer, stricture, or internal ulceration, to which the hæmorrhoidal trouble may be only secondary, but this should be deferred till the last part of the examination.

In order then to examine for piles, and to bring them into view if present, the patient lying as described, must be told to strain gently downwards, as if about to pass a motion. At the same time, the surgeon should gently draw upon the margin of the anus with the tips of the fingers: after a while, if prolapse or internal hæmorrhoids be present, sufficient protrusion can be obtained to establish the diagnosis. It often takes some little time to expose the piles in this manner. Each time the patient is requested to strain, a little manipulation with the fingers will draw down a further portion of the bowel. As described on page 53, the internal pile as it gradually comes into view by the eversion of the muco-cutaneous surface, will have a bright polished appearance, while its surface is somewhat irregular and dimpled, not unlike a mulberry; if uninflamed, its colour will vary from red to a dark purple, being generally the latter. It is seldom that the whole piles can be thus exposed, and it will often be a matter of some surprise to find, when operating, how large piles really are which appeared quite small at the time of examination, the fact being that it was only the lower border of the piles that was thus drawn into view.

Should the rectum contain fæces, a satisfactory examination cannot be obtained, for the patient will not strain for fear of the bowels acting.

In such circumstances (indeed it is to be preferred in most cases) an injection of a pint of warm water should be administered, and an examination made as soon as practicable after the bowels have acted. It often happens that, while at first a satisfactory examination was impossible owing to the retraction of the levator ani and the closure of the sphincter, after the injection the muscles relax, and the diagnosis is established without difficulty. If at such an examination there be much pain, it is generally due to the complication of a fissure, or perhaps ulceration, and if either of these conditions be present it will be unwise to pass the finger into the bowel, a proceeding under the circumstances extremely painful. If no ulceration or inflammation be present the finger may be gently passed within the bowel to complete the examination; and I may again repeat here, that in doing this the patient should be told to strain down, so that the rectum is rather passed over the finger, than the finger into the rectum. The sphincter being relaxed by the patient at the moment of straining, allows the passage of the finger with scarcely any pain.

If we are called to examine the part when internal piles have become strangulated or acutely inflamed, the anus will be found surrounded by a considerable protrusion, which may involve part, or the whole, circumference of the bowel. In the latter case, the swollen mass will be divided by three or four deep sulci. The swelling consists of the piles and prolapsed mucous membrane. The inner part of the fold is of a dark chocolate colour. The outer portion, as it merges towards the skin, is lighter in appearance. If the piles be subjected to the friction of the clothes, they will have a rough and excoriated surface, exuding a blood-stained serum.

If left unrelieved after days of suffering, a large part of the mass may become black, and pass into a state of gangrene.

Treatment of Piles.—This will be considered under two headings.

1. Palliative treatment.
2. Radical cure by operation.

1. *Palliative Treatment.*—Many cases of piles can be cured by suitable treatment, without having recourse to operative interference. Moreover, there will be cases where an operation would be the best and shortest method of treatment, but in which the fears of the patients prevent them obtaining the necessary relief. Something can be done in these circumstances by simple measures to remove the more prominent and distressing symptoms of the malady, though it may not be possible to effect a permanent cure.

As a rule, the longer the symptoms have lasted and the greater the amount of the disease, the less is the likelihood of obtaining satisfactory results without having recourse to an operation. Nevertheless, if the disease has not been too long neglected, by perseverance in the plan of treatment suggested, prolonged over a period to be reckoned by weeks or months rather than by days, effectual relief may often be obtained.

Dietary is important, and by exercising a certain amount of care and discretion, the patients who have been victims to frequent attacks may, in great measure, avoid their recurrence. It is not possible to lay down any detailed rule for dietary applicable to every case, for the habits, customs, and idiosyncrasies of each individual require separate consideration. Yet there are certain general principles that may be valuable as a guide. Brodie, in his classical lectures, has given such admirable directions with regard to this matter, that I will give them to the reader in his own words : "Is the patient a great eater—pampering his appetite by a variety of dishes, and thus exciting himself to swallow more food than his stomach can readily digest? Let him make his dinner on a single dish, and eat of that in moderate quantity. Let him avoid undressed vegetables, especially those which are acid or acescent; as salad, oranges, and apples. Does he commit excesses in drinking? Let him leave off fermented liquors altogether, or take them only in small quantity; and, in particular, let him avoid such fermented liquors, as from the sugar which remains unfermented in them are liable to become acid in the stomach, or which are acid already. The French light wines are injurious in these cases, especially champagne; so are all the varieties of malt liquor, from Burton ale down to home-brewed beer, but none of these liquors are worse than our old-fashioned English liquor called punch. If your patient has been in the habit of dining late in the evening, and going to bed soon after a hearty meal, he should alter his habits in this respect, dining sufficiently early to allow of his food being digested before he retires to rest. If he has led a sedentary life he should cease to do so, walking or riding daily so as to induce perspiration. A person who takes a good deal of exercise may take liberties as to diet, which he could not otherwise take with impunity."[1] I would add to these directions that the patient should avoid cayenne, hot pickles, and pepper, which often appear to have a peculiarly irritating effect on the rectum. I also advise that weak tea be substituted for coffee as a drink, and that coarse

[1] Brodie's Works, vol. ii. p. 545.

foods, such as oatmeal, brown bread, &c., should be avoided, the undigested particles of which appear to exercise an injurious influence on the part. If patients are unable to do without stimulants, a couple of glasses of dry sherry, or a small quantity of whisky and potash water, may be recommended.

Much can be done by careful attention to the local management of the part. All injury or friction from the use of hard paper should be avoided, and above all, special caution should be given against the application of printer's ink. The best plan after defecation is gently to wash the part with a soft sponge and a little cold water.

When the patient has an opportunity of doing so, he should prefer lying more or less in a recumbent position to sitting up in a chair, for whilst he is recumbent a certain amount of mechanical pressure from the column of blood is removed, the engorgement and distension of the venous plexus being diminished. The medicinal treatment to be adopted will depend partly on the nature of the piles and partly on the absence or presence of inflammation. Chronic cases, such as are characterized by hæmorrhage or a tendency to become prolapsed or irritable, will be first considered, leaving the treatment of acute attacks dependent upon inflammation for subsequent consideration.

The hæmorrhage being started by straining at stool, combined with the friction of hardened fæces, it is of the utmost importance for a while that a patient should have a daily soft motion without straining. This is best accomplished by some mild laxative. I have found the following prescription of Brodie's extremely useful, very marked benefit following its administration :—

Conf. sennæ, ℥jss.
Sulph. præcip., ʒss.
Mel rosæ, q.s.
About a teaspoonful every night.

The patient will soon learn to regulate for himself the exact amount required to get a comfortable morning motion. Another prescription that I frequently employ in hospital practice is—

Conf. sennæ,
Conf. pip. nig., āā ℥j.
A large teaspoonful the first thing in the morning.

The confection of black pepper has for long had a reputation in curing piles, and when administered with another laxative it is certainly at times a useful remedy. Occasionally, the confection of pepper causes considerable smarting pain about the anus. I therefore avoid its use when there is any ulceration or unusual tenderness of the part. Friedrichshalle water, though too expensive to use in hospital practice, is an admirable laxative for private patients. It has the great advantage of keeping its efficacy for a long period. In most laxatives the dose has to be increased as the intestines get used to its effects, but with Friedrichshalle water it often happens that the dose requires to be rather diminished than increased by repeated use. The dose required will be from a wineglass to half a tumbler, to be taken on first waking in the morning. Small doses of liquorice powder is a favourite remedy with some persons. If it be preferred to order this powder in the form of a prescription, the following are its ingredients :—

℞ Fol. sennæ, ʒiij.
Rad. glycyrrhizæ, ʒiij.
Pulv. fruct. fœniculi, ʒjss.
Sulph. sublimati, ʒjss.
Pulv. sacch., ʒix.

About a teaspoonful in a wineglass of water
or milk in the morning.

Having attended to the regulation of the bowels, the local treatment must be considered. It is important, in prescribing the use of local applications, that they should at first be sufficiently mild not to cause pain, otherwise the patients will not persevere in their use. In old-standing cases, in which the chief trouble results from prolapse of the piles, medicinal applications are of little service. On the other hand, in the superficial vascular pile, in which hæmorrhage is the prominent symptom, the tendency to bleed may be effectually controlled by astringent ointments. Such applications appear to owe their efficacy to the thickening or hardening they produce on the surface of the vascular area. It is of no use, as is too commonly the case with patients, to smear the anal outlet with the ointment ; to be effectual it requires to be applied to the mucous surface within the sphincter. This can be accomplished either by the patient passing the ointment in with the tip of his finger, or by means of one of the little leaden bottles suggested by Mr. Keetley. These bottles are similar to what artists use for their soft paint.

They should be of a size to contain about a couple of ounces of the ointment. They can be supplied and filled by the chemist. The stopper being unscrewed, a nozzle is fitted in its place, similar to that of the enema tube, which, however, instead of having one opening in the centre, is perforated with several small openings at the side. Allingham's ointment-introducer is another means of applying the remedy, but the patient will not find it so easy to manage as the soft bottle which I recommend.

Of the various substances which have an astringent effect, the subsulphate of iron is perhaps the most valuable, and to commence with, an ointment as follows—

Ferri subsulphatis, gr. vj.
Ung. petrolii, ℥j.

—should be tried, the strength being gradually increased up to 30 grains to the ounce.

The powdered leaves of matico, in the proportion of 20 grains to the ounce of vaseline, often effectually stops hæmorrhage. The unguentum gallæ co. is a very useful application, but I prefer it half the Pharmacopœial strength, that is, only 40 grains to the ounce. Tannic acid in the proportion of a drachm to the ounce is especially useful if there be much bleeding. Suppositories, if more convenient, may be substituted for the ointment. Allingham and Van Buren think highly of the subsulphate for this purpose, being made up in the proportion of 1 grain to 8 grains of the cocoa butter, while, if preferred, the suppositories may be made of gelatine.

Treatment by Cold Water Injection—There can be no doubt as to the efficacy of this plan in a considerable number of cases, if combined with proper constitutional treatment. It was a favourite remedy with the great Sir Benjamin, while Curling and Kelsey both speak highly of the plan. I have had cases under my care which have received most marked benefit from the treatment, though I suspect the cases are few in which the cure is permanent. The water injections have a twofold object—the one is to soften and break up the motions, so as to prevent the parts from being dragged or bruised during defecation; the other is its astringent effect in bracing up the muscular structure both of the bowel and dilated blood-vessels. Brodie advised: "half a pint of cold water fresh from the pump, as a lavement every morning after breakfast, to be kept up as long as possible."

To fulfil, however, the twofold indication, the softening of the motions and the bracing of the muscular structures, the method advocated by Van Buren is the better. The patient should first throw up three-quarters of a pint of tepid water with a view to bringing the motions readily away. Then, *after* the motion, four ounces of quite cold water are injected, which can either be retained, or passed out in a few minutes.

These water injections may be combined with the general treatment already described.

Various forms of pads, plugs, and trusses have been devised for the support of piles. As a rule, they are of little benefit, if not actually injurious. In one case I have known some benefit follow the wearing of a small ivory plug. The case was one in which the sphincter was strong, powerful, and very irritable. However, I prefer in such cases the daily passage of a full-sized conical bougie passed up the bowel immediately after the motion, and kept in for a few minutes.

Treatment of Inflamed and Strangulated Piles.—In many cases "an attack" of the piles for which the practitioner is consulted, means an accidental inflammation grafted on to a chronic disorder. If the inflammation be confined to a slight œdema and redness of the external folds, a dose of castor-oil may be prescribed, while half an ounce of thin warm starch, to which twenty drops of the liquor opii sedativi has been added, gently injected up the rectum by means of a glass syringe, is a soothing local application. If this cannot be managed, a suppository containing a quarter of a grain of morphia may be gently passed within the bowel, and the superficial parts about the anus may be smeared with simple vaseline ointment. If the inflammation be more considerable, involving not only the anal folds but also the internal hæmorrhoidal plexus, the patient must be confined to bed. Hot fomentations are very soothing, and after giving an opium injection I like to have a sponge wrung out in very hot water, kept firmly pressed against the part by means of a T bandage. The pressure thus exercised has a very beneficial effect, giving the patient a sensation of support, and stopping in great measure the desire to strain.

The patient should be kept in a recumbent position, or he may vary this, by kneeling with the buttocks raised and the head lowered, for by thus removing the intra-venous pressure substantial relief is often obtained. Cold applications, especially pounded ice in a bladder, are recommended by some surgeons; but I have generally found the application of warmth to be more beneficial.

It will sometimes happen that a patient who has previously refused operation, will readily consent to have his piles tied, if immediate relief can be ensured by the proceeding.

Should an operation be performed under the circumstances?

Experience has proved that no harm results by operating at such a time; and it is now regarded as legitimate surgery to advise an operation for inflamed piles, thus giving immediate relief, and effecting a permanent cure by a single operation. The operation must, of course, be done under an anæsthetic. Should the patient have fears of an operation, he will perhaps consent so far as to take some ether, and to have the sphincter thoroughly stretched, which alone may often greatly relieve his condition, with the possibility of obtaining permanent benefit, as in the following case (19).

Mr. B. P., aged 34, who had generally lived pretty freely, was exposed for some time to a cold east wind at a race meeting. The following day he felt pain and discomfort about the rectum, which increased; and on the third day, when I was asked to see him, I found the patient in bed, with a coated tongue, a temperature of 101°, and a pulse of 95. He was complaining of great pain about the rectum, which had entirely deprived him of sleep during the previous night. His bowels had not been opened for two days, and he had a sensation of fulness, and a desire to strain; which, when indulged in, aggravated the pain. Upon examining the part, the anus was nearly obscured by three swellings the size of pigeons' eggs. These were composed of the anal folds in a highly œdematous condition, the œdema also involving the lower part of the true mucous membrane with which the folds were continuous.

There was no bleeding or discharge, and the part was exquisitely tender on examination, and there was some spasm of the sphincter muscle. In this case, under an anæsthetic administered by Mr. J. Morgan, I stretched the sphincter, which almost immediately relieved the patient of his pain, and in a few days all swelling and inflammation had subsided.

Mr. P. had considerable trouble from time to time with his piles before this stretching, but I ascertained that since that time (five years) he has never had any discomfort.

Strangulated Piles.—From causes already mentioned (page 78), piles may become strangulated, causing severe symptoms, and demanding active interference. The anus will be found surrounded by a congested mass of prolapsed piles and mucous membrane, the whole in a swollen œdematous condition, and engorged with venous blood. The tumours consist of two or more rolls or folds divided by deep sulci, having a dark claret colour approaching to blackness. If the patient will consent, the opportunity may be seized of performing the radical cure by ligature; if not, the piles must be reduced. Under an anæsthetic this can generally be easily accomplished by gentle and continuous pressure on the protruding mass with the finger-tips, the parts slowly returning within the sphincter. If necessary, this muscle may be stretched to effect the reduction. My experience of these cases is not so much that there is a difficulty in reducing the strangulated piles, as in preventing the mass again protruding. After reduction, pressure should be kept on the anus for a while by a firm lint pad and perineal bandage. The swollen mass seems to act like a foreign body when first reduced, exciting a straining to get rid of it. The swollen parts, however, become quickly reduced after their return, so that the liability to protrude soon diminishes. If an anæsthetic is impracticable, and the part too tender to admit of handling, the return may sometimes be effected by continuous pressure with a soft sponge, the patient keeping in the kneeling position, with the head lowered. Some surgeons recommend the application of an ice-bag, which certainly might be tried for a while, but I do not think it should be used for long, for the chance of gangrene must be considered.

If the piles have actally become gangrenous, beyond applying a charcoal poultice and keeping the patient absolutely at rest, nothing further can be done. The pain in great measure ceases when gangrene comes on, and the mass will, in a few days, separate by itself. The case should be carefully watched, however, as severe hæmorrhage sometimes follows the separation of the slough.

Radical Cure by Operation.—Before describing the methods employed, it will be well to consider the class of cases in which operative interference is desirable, for while, on the one hand, in the whole range of surgery, there is no procedure affording greater and more permanent relief with less risk to life than does the operation for piles in suitable cases; on the other, it will save much disappointment to remember that some cases do not admit of cure by operation, while others can be completely relieved by simpler means.

No judicious surgeon would advise operation in slight cases which give little trouble either from pain, prolapse, or hæmorrhage; nor, indeed, in the severer forms, unless either palliative treatment had been tried in vain, or from the nature of the piles would be useless. It is not possible to lay down any arbitrary rules as to cases which demand operative interference, but generally speaking it will be found that where there has been free and prolonged hæmorrhage, where the hæmorrhoids are large and the tissues hypertrophied, where tumours are habitually extruded at defecation, or lastly, where recurrent attacks of pain and inflammation are frequent, the piles are best treated by operation, from which a rapid and permanent cure may be promised.

On the other hand, there are certain cases in which no benefit can be expected from operation, or in which the benefit to be obtained is so slight as not to be worth the risk incurred. Such cases include those in which the piles are complicated or caused by some other disorder higher up the bowel. Thus, stricture and cancer are not infrequently complicated by hæmorrhoidal swelling. It would be a grave mistake to touch the piles under these circumstances. The various displacements of the uterus frequently give rise to piles, which, as a rule, cannot be cured by operation so long as the displacement remains. I do not, however, consider slight displacements as a bar to the success of an operation.

Piles depending upon disease of the bladder or enlarged prostate are unsuitable for operation. So, too, when piles complicate sclerosis of the liver or thoracic disease, they should be left alone. Cases will occasionally be met with in which serious symptoms exist coincidentally with piles, but nevertheless do not certainly depend upon them in the relation of effect to cause. If the symptoms be not those usually due to piles, the greatest care should be taken to ascertain whether the symptoms may not result from some independent disease. In such instances it may be right, if no other adequate cause can be detected, to advise that the piles be operated upon on the probability that to them alone the symptoms are due. In these cases, since there must always be some doubt in the diagnosis, a cure cannot certainly be promised.

The rectum is occasionally the seat of hysterical affection. I once nearly fell into the error of operating under these circumstances (Case 20). A young lady was brought to me for the purpose of being operated upon for piles. Her sufferings, as described by herself and her mother, appeared to be very severe. There was something, however, rather anomalous about the character of the pain, for it would come on sometimes at night, sometimes in the afternoon, and occasionally, though exceptionally, at stool. Upon examination, the superficial parts were exquisitely tender, even to the slightest touch. With all this pain and tenderness there was no sign of redness or œdema. On slightly everting the mucous membrane with the fingers a small prolapsed swelling was produced, but not more than may frequently be seen in a healthy rectum. A thorough examination made me confident that no ulceration or fissure existed. I advised that palliative treatment should first be tried. I afterwards heard that the rectal trouble had disappeared, and that a contracted knee-joint had taken its place, and have little doubt that from the subsequent history of the case the symptoms were purely hysterical.

The extreme pain upon touching any part of the anal margin, however gently, and the total absence of any lesion or inflammatory condition to account for it, taken in conjunction with the uncertain time at which the pain occurred, together with the surrounding circumstances, ought, I think, to have established the diagnosis.

Pregnancy is not an absolute bar to the operation, but its performance would be seldom advisable under the circumstances. There can be no doubt, however, that if there were serious hæmorrhage, it would be right to tie the bleeding pile.

The risk involved to life from an operation for piles is extremely small. Mr. Allingham states that in 1,600 operations by ligature, he has not had a single fatal result. At St. Mark's Hospital, the fatality following the operation has been only one in 670. Nevertheless, I cannot but think, after a careful perusal of all the available statistics of this operation, that the death-rate in ordinary hospital and private practice will be found to be somewhat in excess even of the lower figure quoted above. In my own practice, I have had the misfortune to lose a valuable life from the operation for piles, the patient dying suddenly on the sixth day, with symptoms of cardiac embolism. With this exception, I have never had a case which has ever given me cause for anxiety.

The smallness of the risk should not lull the surgeon into a sense of absolute security, and he should spare no effort in ascertaining the general constitutional condition of his patient before subjecting him to operation. A risk that may be infinitesimal in a healthy man becomes greatly magnified in one who is broken in health from alcoholism, albuminuria, or diabetes, and no operation should be advised until the state of the urine has been carefully examined.

The amount of risk, slight as it is, should be clearly laid before the patient or his friends. If a man is to have some grave operation performed, such as the removal of a cancer or the amputation of a limb, both he and his friends are well aware of the risk involved, and are accordingly prepared. It is therefore in the smaller operations, regarded by the surgeon and public as free from danger, that a fatality, when it does occur, becomes so tragic from being unexpected.

At the same time, it should be explained, that against the small risk of harm must be weighed the immense benefit which the operation affords, and it should be further remembered that not only does the operation relieve the patient from a painful disease, but also from one which may in itself become an actual source of danger to life.

Of the many methods devised for operating on piles, the following include the chief of those which have survived the test of experience:—

1. Crushing.
2. Puncture with hot needles.
3. Nitric acid.
4. Injections of carbolic acid.
5. The clamp and cautery.
6. Ligature.

Far be it from me to condemn any of these methods, for I can conceive any one of them being applicable to a particular case, but, on the whole, I fancy that the operator will have the best results who habitually practises the proceeding with which he is most familiar. Of the first two methods, I have had little practical experience. Full details of the plan of crushing will be found in a paper of Mr. Pollock's.[1] The results he obtained were very encouraging, and I know that many surgeons now adopt this method with very satisfactory cures. The puncture by hot needles has been fully described by Mr. Reeves in an able and interesting paper.[2] The fact of this method being advocated by such a well-known authority is sufficient to justify such a procedure. I will now pass on to the operations of which I have had personal experience.

Application of Nitric Acid.—In a limited number of cases this is a safe and effectual method of treatment; but it is only of use where the trouble consists of hæmorrhage from superficial vascular areas. It requires to be applied freely, but with care. The patient being placed under an anæsthetic, the sphincters must be dilated. The vascular spot must then be exposed, either by a speculum or the fingers of an assistant. Its surface should then be dried by a piece of blotting-paper, after which the spot must be freely painted over with the strongest fuming nitric acid. Allowing this to remain for a few seconds, it may then be washed by a solution of carbonate of soda. A little vaseline being applied to the surface, the whole is returned well within the bowel.

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[1] Lancet, 1880, vol. ii. p. 1.

[2] Lancet, 1877.

After this treatment the patient should be confined to his room for a few days until the separation of the slough. The cure is effected partly by the actual destruction of the superficial vessels by the acid, and partly by the consolidation and contraction of the remainder, by the resultant inflammatory action.

Injection of Carbolic Acid.—This method has found much favour with American surgeons, Kelsey[1] especially speaking highly of it. Like the nitric acid treatment, however, it has a somewhat limited application, being unsuitable for hæmorrhoids of any large extent, or those in which there is much hypertrophy of the connective tissue. In the few cases in which I have tried it, it was certainly efficient in arresting bleeding, but sufficient time has not elapsed to enable me to say whether the cures were permanent. (See Case 18.)

I use the acid the same strength as recommended by Kelsey:—

Acidi carbolici, gr. x.
Glycerini, ʒj.
Aquæ, ʒj.

Four drops to be injected with a hypodermic syringe into the centre of the piles.

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[1] Diseases of the Rectum, p. 105.

Immediately after injection, the pile must be completely returned inside the sphincter. Otherwise it will rapidly swell up, and become strangulated. It is important that the needle should be thrust well into the centre of the pile, for if the acid be injected beneath the mucous membrane only the membrane will slough and an ulcer result. Several injections may be required, and the patient should be kept in the recumbent position for a day or two following the treatment.

The Clamp and Cautery.—Whoever originally suggested the idea, there can be no doubt that we are practically indebted to Mr. Henry Smith for the popularity and extensive adoption of this operation, which in his hands has been followed by such excellent results as to induce many surgeons to follow his example. The necessary instruments for performing the operation consist of the benzoline cautery, the vulsellum forceps, and the special clamp devised by Mr. Henry Smith. Of this clamp Mr. Smith says, "that it is very essential for its right action that the blades should be so constructed as to have their parallelism complete when they meet, otherwise the enclosed membrane may slip."

The pile or prolapsed part is seized by the vulsellum forceps, and drawn well down. The clamp is then tightly applied to the base, being secured so firmly as to prevent all risk of slipping. This having been attended to, the mucous membrane beyond the grasp of the clamp is cut off either by scissors, or divided by the heated knife. In doing this, care should be taken not to cut too closely to the clamp blades, but to leave as much as the sixth of an inch for the purpose of searing. If cut with scissors, the whole raw stump is carefully and thoroughly seared by the cautery at a dull red-heat. The clamp is then slowly relaxed, the stump being carefully observed to see if there be any bleeding point. Should such be seen, the clamp is again tightened, and the stump touched with the cautery, and when all tendency to bleed is thus stopped, the clamp is removed. Each bunch of piles is treated in a similar manner, and the parts being well oiled, the whole is returned within the sphincter.

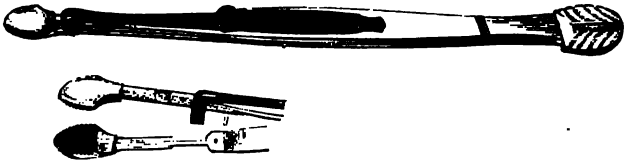
Treatment by Ligature. — Without having the boldness to assert that any surgical procedure has been brought to actual perfection, I cannot but think that the ligature, if properly used in the cure of piles, leaves little room for improvement. The popularity and perfection which this method of treatment has reached, is, in great measure, due to its being the practice chiefly adopted by Syme, Quain, Curling, and Allingham. The patient should be prepared by administering a dose of castor-oil the last thing in the evening prior to the operation, and in the morning, whether the bowels have acted or not, an enema of a pint and a half of warm water should be administered an hour previous to the time appointed for operation. I prefer to operate at half-past eight or nine in the morning, in order that the patient may not be too long kept without food.

The patient being thoroughly under the influence of an anæsthetic, is placed in the lithotomy position, the legs being securely fixed by a Clover's crutch. Some surgeons prefer operating with the patient on his side. In the lithotomy position, however, the parts are much more thoroughly exposed, and should any unforeseen accident arise from hæmorrhage or other causes, the surgeon has far better light and command of the part, than when the patient is on his side. I next proceed thoroughly to dilate the sphincter muscles, by passing the forefinger of each hand well into the bowel, and exercising firm and continuous traction. To be effectual this traction must be continued for three or four minutes. In making this traction it is necessary to have complete control over the force used; otherwise, by the muscles suddenly giving, a considerable rent may occur. Directly the sensation of the sphincter muscle too rapidly dilating is experienced, the pressure must be at once lessened. By attending to this, the accident of a sudden rupture cannot occur.

The effect of this thorough dilatation of the sphincters is to render the subsequent steps of the operation easy and certain. Even the most inexperienced operator, after dilating the sphincters, need have no fear of not finding the piles, for the moment the sphincters are dilated the piles prolapse, and the whole part is distinctly seen and mapped out. Thus there is no fear of overlooking any piles or villous tuft, which, if left, might cause a reproduction of all the old symptoms.

The sphincters having been fully dilated, the most prominent pile is first seized with the sliding forceps. It is then drawn downwards and towards the middle line, so as to make the crease marking the junction of the skin with the mucous membrane prominent, and the mucous membrane and pile are then detached from the anal margin by cutting

FIG. 4.



SLIDING FORCEPS FOR SEIZING PILES.

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with scissors just through this line of junction, while by a few light snips the detached portion can be dissected off the submucous coat for a short distance. This detachment is not required to be very extensive, but it must be sufficient to form a moderately deep groove. A strong silk ligature, previously soaked in carbolic lotion, is tied firmly round the undetached root of the pile.

This manipulation requires a little care. The assistant is directed to draw down the pile with moderate force. This makes a kind of pedicle of the mucous membrane above the pile. The loop of the ligature is then slipped into the groove already cut, the knot being tied over the mucous membrane in the cavity of the bowel.

Before tightening the knot the ligature should be manipulated a little up the bowel, so as to include as much as possible of the mucous membrane forming the pedicle. Great care must be taken to strangulate the part completely, but not so tightly as to cut the pedicle through with the ligature. When the piles are numerous, several ligatures are required. As a rule, however, three or four will be sufficient. When the hæmorrhoidal tumours form a complete circle round the bowel, the most prominent portions should be treated separately. The incisions through the mucous membrane should be extended so as to form lateral cuts dividing the pile mass into segments, each of which must be separately tied. When the ligatures are all tied the piles may be cut off, care being taken to leave a sufficient portion beyond the ligature to prevent it slipping. The parts should then be gently sponged, and if any distinctly bleeding point is noticed, it may be ligatured; as a rule, there is little more than a free oozing, which quickly stops when the legs are taken down from the lithotomy position. The best dressing is a little pad of absorbent antiseptic cotton-wool applied against the anal orifice. Over this may be placed a second much larger pad of the same material, so as to fill up the anal depression. A T bandage is then firmly applied to keep up pressure on the part, which prevents the tendency to venous oozing, while it affords considerable comfort to the patient by giving support to the part, and preventing the desire to strain.

Some operators recommend a suppository containing one-third of a grain of morphia to be passed into the bowel immediately after the operation, a plan I do not think very efficacious, and I doubt whether the rectum is in a condition to absorb it. I prefer to give no opium till the evening, when I prescribe a grain and a half of solid opium, or 25 drops of the liquor opii sedativi. This generally ensures a night free from pain, and confines the bowels for a day or two. If the sphincters have been thoroughly stretched, and no uncut skin included in the ligatures, there is generally not much pain following the operation. What there is, comes on in spasms, and seems to be due to some twitching of the levatores ani muscles.

On the morning following the operation the large external pad can be removed. Its removal is painless, since it is in contact with no part of the wound. The little pad beneath will be found blood-stained and adherent. I moisten this with a weak Condy's solution, making no attempt to remove it, the surrounding parts having been cleaned, I apply a fresh pad of cotton-wool over it. The next day, that is at the second dressing, the pad in contact with the wound is loosened, and as a rule comes away readily enough. If it does not do so, it may be detached by gentle syringing. All the subsequent dressing that is necessary is a piece of lint spread with eucalyptus vaseline—olei eucalyptici ʒij, unguentum petrolii ℥ij—kept in place by a little pad of wool. The lint should be changed twice daily, and the part cleansed. The ligatures come away from the fifth to the eighth day. They should be allowed to separate by themselves, and the temptation to give them a pull avoided, for this always causes pain, and is quite unnecessary.

Dietary after Rectal Operations.—If a patient be young, strong and healthy, it is well to restrict him after pile operations to slop diet, such as arrowroot, beef-tea, milk, &c.

I think, however, that it is a grave error to apply the same principle to middle-aged or elderly men accustomed to good living. If deprived of solid food, wind will collect in the intestines, producing distressing symptoms. Moreover, suddenly to deprive a patient of much of the nourishment he is used to, cannot be done with impunity, and I think it is best in such cases, so soon as the ether sickness has passed away, to put them on a meat diet at once, restricting it somewhat as may seem necessary.

On the fifth day after the operation a dose of castor-oil should be given, and about the time of expecting a motion three ounces of olive-oil as an injection, is a great comfort. If the rectum be allowed to become too distended, it is liable to produce some œdema about the anus, a condition retarding the healing. If all goes well, by the end of a week the patient may get on to the sofa. If practicable, it is better, though not absolutely necessary, to keep more or less in the recumbent position till the stumps of the pile are healed. By the second or third day after the operation there are often one or two œdematous swellings at the anal margin. These need not cause the least anxiety, and will slowly disappear. They are merely œdematous muco-cutaneous folds.

Another small trouble which may follow the operation is retention of urine. If by the evening no water has been passed, and a hot sponge above the pubes fails to produce the desired effect, the water must be drawn off with a No 7 flexible catheter, which may have to be repeated for two or three days.

I will now consider some of the complications which may occur during the course of treatment. Of these the most serious is hæmorrhage, and the remarks about to be made not only apply to hæmorrhage from piles, but to that from any other rectal operation. The bleeding may be primary, recurrent, or secondary. In all cutting operations about the rectum, the hæmorrhage for a few seconds is pretty free, but excepting in cases of excision of the bowel, or division of fistula running high up, it is never to a dangerous extent. The arterial branches, though numerous, are small and quickly contract, the veins mostly furnishing the blood.

If the patient be old, or anæmic, it may be advisable to put some pressure forceps at once on any point that bleeds freely, but in ordinary cases any delay is unnecessary until the operation is complete. Besides, it generally happens that, on ligaturing the pile, the bleeding stops. Upon completing the operation, any obvious bleeding point may be tied. The venous oozing is readily arrested when the cotton-wool compress is applied as already described, and the legs released from the lithotomy position.

Recurrent Hæmorrhage.—This is the bleeding that may come on soon after the operation, generally speaking within twelve hours, very rarely it may happen as late as the second day. It is due to some vessel or vessels which have ceased bleeding at the time of operation without being ligatured, but from which, when the patient becomes warm in bed and reaction is established, blood begins again to flow. Recurrent hæmorrhage is not, as a rule, sudden and severe like secondary hæmorrhage, for the vessel furnishing it is generally small. Nevertheless, it may become serious from its persistency. The blood will begin slowly to trickle through, or by the side of the pad, while at the same time it may distend the cavity of the bowel.

After operating for piles, I always like to have a final look before leaving the house to see that all is right, and to direct the nurse to watch the case carefully afterwards.

It must not be forgotten that cases have been recorded[1] in which hæmorrhage has taken place to a very serious extent within the bowel without its being suspected, owing to the blood being retained above the sphincter. Such an occurrence, however, could scarcely take place if the sphincter had been previously dilated.

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[1] Sir A. Cooper's Lectures, 3rd edition, p. 422.

Secondary Hæmorrhage.—Secondary hæmorrhage is the bleeding that occurs some days after the operation, generally between the fourth and seventh day. It results from the obliteration of the vessel not being complete at the time the ligature separates, or it may be that a vessel is opened by some sloughing or ulceration in its neighbourhood. The blood in these cases often comes suddenly in considerable quantity. Recurrent hæmorrhage being due to mechanical causes, may occur in the most perfectly healthy individual; secondary hæmorrhage, on the other hand, is only liable to occur in those who have some defective constitutional condition retarding the proper healing of the wound.

Fortunately, compared with arteries of larger calibre, those in the rectum rarely furnish examples of secondary hæmorrhage.

Let us now consider the treatment to be adopted should bleeding occur. Nothing so taxes the skill and resources of a surgeon as cases of recurrent and secondary hæmorrhage. The danger is often grave, while patients and friends, being powerless in the emergency, are dependent on the surgeon for prompt action. I have previously published, in the St. Bartholomew's Hospital Reports and the Transactions of the medical societies, papers[1] relating to the treatment of secondary hæmorrhage in various parts of the body. Fortunately, however, as regards the rectum, my experience of the accident is extremely small. Troublesome recurrent hæmorrhage I have had to deal with after operations, but I can call to mind only one case of true secondary hæmorrhage from the rectum.

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[1] St. Bartholomew's Hosp. Reports, 1874-5; Medico-Chir. Trans. 1878; Trans. Clin. Soc. 1873 and 1880.

Treatment of Bleeding.—It is sometimes found, after putting the patient into bed, that there is a slight oozing by the side of the pad. There is no occasion to be alarmed at this, for such leakage is common enough. If, however, it does not quickly subside, I tighten the perineal bandage a little, and direct the nurse to press firmly upon the anal pad. This nearly always has the desired effect. Should the oozing continue or recommence, so that an appreciable quantity of blood is lost, it is better to remove the pad and syringe the part with cold water, passing a small oblong piece of ice into the bowel, and again applying the compress. In the extremely rare cases in which this fails to check the bleeding, it is better at once firmly to plug the wound after the manner to be presently described. Of course, should it so happen that the bleeding point can be seen, it may be seized and ligatured. Anything like prolonged search is unsatisfactory, for the bleeding has more of the character of a general oozing; at any rate, no distinct vessel can be seen. In secondary hæmorrhage, the search for the bleeding point is even less likely to be successful, but the part should be examined in a good light—which, by-the-by, is often the secret of successful surgery—on the chance of picking up the vessel.

One of the difficulties in cases of secondary hæmorrhage is that the bleeding has often stopped by the time the surgeon arrives, while the granulations about the wound bleed readily on being touched. Thus the real point of the bleeding cannot be found. If the hæmorrhage has occurred but once, and has stopped on the arrival of the surgeon, all dressings of every kind should be removed, and the blood clot which has collected should be gently syringed away with a little cold water. The patient should then be left quietly on his side with the pelvis slightly raised, the part being exposed and kept as cool as possible. The surgeon may hope that the bleeding will not recur, and that no further treatment will be required; but he must on no account leave the patient unless effectual aid is immediately at hand, if necessary.

He may leave with the nurse a large-sized conical bougie, well smeared with ointment of the subsulphate of iron, to be immediately passed up the rectum if the bleeding recur. If this prove effectual and be well borne, it should be retained for some days. On the other hand, if the bougie does not completely arrest the bleeding, the rectum may be plugged as follows:—A sponge should be firmly rolled and tied in the middle by a piece of tape or strong twine, the two ends of which are left long. The sponge should then be trimmed with scissors to a circular form about the size of a hen's egg. If it can be obtained, the conical sponge recommended by Allingham should be used.

The sponge wrung out as dry as possible is passed three inches up the rectum, the two ends of the string hanging out at the anus. The whole canal of the bowel is then carefully and systematically plugged with cotton-wool, sprinkled with the subsulphate of iron powder, the plug being put between the two ends of the string, so that they may be tied across it, the effect of which will be to draw the sponge downwards and the plug upwards. In this way the rectum is fairly and evenly distended.

The following simple apparatus makes a good plug for hæmorrhage from a cavity. A No. 7 red india-rubber catheter is passed into an india-rubber letter, the orifice of the letter being tied tightly round the catheter three inches from its extremity. This makes a cylindrical air-tight bag, which can be expanded to any desired extent by inflation through the catheter. In making this apparatus it is necessary to slip a piece of fine metallic tubing down the inside of the catheter to the point around which the bag is to be tied; otherwise sufficient pressure cannot be obtained to make it air-tight. The plug may be allowed to remain a week, and then removed with the greatest gentleness.

I always warn a patient that there may be some pain and bleeding the first time the bowels are open after an operation for piles; indeed, it is not uncommon to get a little bleeding each time the bowels are relieved for a week or ten days—an occurrence which will greatly alarm the patient unless it has been previously explained to him.

It sometimes, though fortunately rarely, happens that a portion of the wound will refuse to heal, degenerating into a condition closely resembling an anal ulcer. If by three weeks after an operation any pain is experienced on passing a motion, the part should be carefully examined, and an explanation will generally be found in an unhealed portion of the wound.

This may cause considerable annoyance to an irritable patient, who may magnify his symptoms and bring himself to believe that your operation has made him worse than before. Such a belief is apt to grow apace till your patient puts himself under other hands to remedy the evil he believes you have originated.

These cases require patience and tact. The patient should be kept on the sofa, and the bowels not too much irritated with medicine; a soft action should be obtained daily by a small dose of Friedrichshalle water, and the following suppository introduced immediately after the action :—

Morphiæ, gr. ¼.
Hydrarg. subchlor., gr. j.
Olei theobromæ, gr. x.

It will generally happen that under this treatment the symptoms will slowly disappear. Should the sore refuse to heal it must be treated as an anal ulcer, the sphincter being set at rest either by dilatation or division.

Stricture sometimes follows an operation for piles, and I have the notes of four cases of stricture admitted into St. Bartholomew's Hospital from this cause. The following is an example, the notes of which are taken from Sitwell Ward Register :—

Case 21.—"M. J., aged 22, was admitted with bleeding piles and tenesmus. She had two large hæmorrhoids by the *side* of the anus. These were tied, the *skin* being divided. The ligatures came away on the fourth day, and she was discharged apparently cured at the end of a month. Seventeen months later she was again admitted, stating that after leaving the hospital she had discharge and trouble with the bowel. On examination, a firm annular stricture was found close to the anus, which would scarcely admit the tip of the finger." I have no doubt that this stricture was caused by the skin being included in the original operation. I consider it a most important point in operating for internal piles that the incision should be made and the ligature applied wholly on the mucous membrane.

If the case be an old-standing one, and complicated by large external piles, these should be removed rather by dissecting the skin partly off them than by cutting the whole of the pile away bodily. The cicatrix in the mucous membrane stretches and gives no trouble, while that formed by the removal of skin is apt to become hard and contracted. By attending to this rule there is practically no fear of stricture following the operation for piles.

CHAPTER IV.

PROLAPSE OF THE RECTUM.

PROLAPSE of the rectum is the descent of a portion of bowel in a healthy state, and must not be confused with the prolapse which occasionally complicates hæmorrhoidal tumours. To facilitate description, prolapse is divided into two varieties—the "partial" and "complete."

In the former, the mucous membrane alone is extruded, sliding away as it were from the muscular coat by the stretching of the loose fibrous tissue connecting the two. In the complete prolapse, all the coats of the rectum, including the peritoneal, are involved. It is, in fact, a true turning inside out of the lower part of the bowel. Partial prolapse is necessarily limited in extent, there being seldom more than an inch or so of the membrane protruded. In the complete prolapse, the amount is much greater, often involving six inches or more of the bowel. It is of importance to remember, too, that in complete prolapse occasionally a hernial pouch is formed, into which a portion of the abdominal viscera may descend. This pouch is, of course, situated anteriorly, so that instead of the prolapsed tumour equally encircling the anus, its bulk will be on the anterior or perineal aspect, in which case the opening into the bowel is turned backwards.

Prolapse may occur at any age, but it is more common in children than in adults. It is generally the result of undue straining, though occasionally may be caused by a polypoid growth. In children, in addition to the prolonged straining, the prolapse is often coincident with some weakening illness which causes absorption of the fat in the ischio-rectal fossæ, together with relaxation of the muscular fibres of the part. Stone in the bladder in children is frequently complicated by prolapse, a condition to be explained by the constant micturition and straining of the child, together with the wasting caused by the pain and suffering.

Phimosis (though much less commonly than stone, in proportion to its frequency) is a cause of prolapse. Apart from instances in which some definite cause, such as straining, can be detected, there are other cases the pathology of which is more obscure. Occasionally, prolapse in children results from the pernicious habit, among some mothers and nurses, of putting a child to sit on the utensil, and leaving it there with the fear of punishment if the little creature does not succeed in passing a motion. This leads to persistent and often useless straining efforts, eventually resulting in prolapse of the bowel. In children, owing to the comparative straightness of the sacrum, the parts are naturally less well supported than in the adult.

After childhood, advanced life is the most frequent period for prolapse, and in these cases, too, it can sometimes be traced to some cause leading to unnatural straining efforts, amongst which may be mentioned enlarged prostate, the pressure of which on the rectum produces a morbid sensation of fulness of the bowel, resulting in injurious efforts for relief.

Relaxation of the resisting power of the muscular and other structures of the perinæum in advanced life may lead to prolapse. In these cases the prolapse usually comes on slowly, gradually increasing in amount till it reaches large proportions. In children the first prolapse of the bowel occurs suddenly, acquiring larger dimensions by subsequent protrusions. Sudden prolapse may also occasionally occur in the adult, and one of the most extensive cases I have ever seen happened in this way. The following are my notes of the case (21):—

"M. F.,[1] aged 40, was quite well till six months before admission into the hospital. One day, the bowels being constipated, she was straining violently at stool, when a large 'part of her body suddenly came down.' After some difficulty she was able to return this, but since that time the bowel has nearly always been in a state of prolapse, and lately she has not been able to return it. Her condition is a very miserable one, for the fæces pass away without her knowledge, and she can only hold her water for a few minutes at a time. She has frequently a sensation of sickness, but no actual vomiting. On admission into the hospital, projecting from the anus was a large tumour the size of a child's head; it was of a bright red colour, and obviously consisted of a portion of the rectum turned inside out, and tightly stretched, while the canal of the bowel could be seen a little behind the centre. By a moderate amount of persistent pressure, the prolapse could be reduced, but it quickly returned again."

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[1] Sitwell Ward Register, vol. vii. p. 35.

The case was treated by the application of fuming nitric acid. After the first application the patient was greatly improved, and the prolapse, although continuing to come down, was only half its original size. A second application of acid, five weeks after the first, was followed by still further improvement, and after a third application the patient was able to leave the hospital with the prolapse apparently cured, the treatment having extended over four months. The diagnosis of these cases when the prolapse is down is, as a rule, a matter of extreme simplicity, but it is necessary to be a little careful in the examination to make quite sure of the diagnosis.

Prolapse may be distinguished by its softer feel and uniformly smooth surface from a protruded *polypus*, and above all, by the absence of a pedicle, which can always be recognized in a polypus by passing the finger into the bowel, while the uniform smooth rolls of the bright red membrane in prolapse are pretty readily distinguishable from the bunched or excrescence-like arrangement of piles. The most likely difficulty, however, to arise is in recognizing what particular part of the bowel forms the protrusion. In order to make the diagnosis more simple in these cases, their physical features have been divided by Van Buren into three varieties. In the first there is no sulcus round the base of the protrusion, so that the mucous membrane forming the covering of the tumour can be traced by the sight or finger to be directly continuous with the muco-cutaneous anal margin.

In the second a well-marked sulcus exists round the protrusion, so that the finger passed into the anal outlet by the side of the protrusion would encounter a cul-de-sac an inch or two up the bowel, extending round the whole circumference.

In the third variety the tumour protrudes from the anus, or may only be felt like a sausage-shaped swelling within the rectum, the finger passing up between the tumour and the sides of the bowel without finding any cul-de-sac at the top.

In the first of these varieties, the protrusion commences by prolapse of the mucous membrane at the anal margin, the remaining walls of the rectum being subsequently slowly dragged down. In the second and third varieties, the intussusception begins higher up the bowel, and is a true invagination of the upper into the lower part of the gut. They are but degrees of the same disorder. The second variety is simply the upper part of the rectum passing into the lower, the point at which the invagination commences being a few inches only up the bowel. In the last variety the intussusception has commenced higher up the bowel, possibly in the colon, or even at the ileo-cæcal valve. Cabaret relates a case in which twelve inches of the colon was prolapsed through the anus, and in which a sound could be passed a long way up between the prolapse and the anal margin.

An infant (Case 22) was recently brought for my inspection to the casualty department at St. Bartholomew's Hospital, presenting a prolapse even more extensive than this. A piece of dry, stringy-looking matter, resembling the dried funicular cord, was protruding from the anus, the protruding part being about a couple of inches long. The mother stated that the infant had been ailing for a week. It had vomited and passed some blood and greenish slime from time to time. I pulled upon the protrusion, and soon discovered that it was the dried-up end of a bit of gangrenous bowel, and by pulling at this portion it seemed as if I might have pulled out any amount of dark red congested bowel—a proceeding I naturally desisted from. The patient was subsequently admitted under Mr. Baker's care into the hospital, and the case is recorded by Mr. Bowlby in the 34th vol. of the Pathological Transactions as follows:—

"On May 10 a female infant, aged 18 months, was admitted into St. Bartholomew's, and some shreds of gangrenous bowel were removed by the exercise of very slight traction. During the three following days no blood was passed, but a good deal of mucus, and on May 13 another small portion of the gut came away. From this time the patient rapidly improved, and in a week's time was discharged, the motions being fairly healthy. On June 1 a syphilitic rash made its appearance, the child refused its food, wasted and died in July, its motions having been natural until its death. A post-mortem examination showed the entire colon to be destroyed, the small intestine reaching to within three inches of the anus. At this point the peritoneum was puckered and seared, the calibre of the gut being slightly narrowed. Five inches higher up the small intestine was a fibrous polypoid growth, nearly filling the intestinal canal."

The portions of sloughy gut removed during life were respectively the cæcum with the vermiform appendix, and part of the colon. This case is of great interest both as regards the extraordinary extent of the prolapsed bowel, the entire colon in fact, together with the complete recovery of the infant by its spontaneous separation. It is difficult not to believe in this case that the polypus was the cause of the intussusception; but yet, if it were so, how are we to explain why the portion of bowel from which the polypus grew did not form the summit of the protrusion?

Whether the polypus in this particular case was the cause of the intussusception may be doubtful, yet there are many instances in which a polypus has certainly been the cause of prolapse in the lower part of the rectum.

I do not propose to consider further these cases of extensive intussusception in which the colon or vermiform appendix present at the anus, for they belong rather to the domain of abdominal surgery than to a special treatise on the rectum.

It can be understood how there is little difficulty in the diagnosis of prolapse when the bowel can be actually seen everted at the anus. Yet extensive prolapse may exist, causing grave symptoms without the disease be even suspected, owing to the bowel only descending at stool, and being again drawn up after the cessation of the action. The following case (23), which was transferred to my care by Dr. Duckworth, will serve as an example, the notes being kindly supplied by our late house physician, Dr. Berry:—

"P. H., a girl aged 18, had been for some time in the surgical ward of a hospital for severe rectal hæmorrhage; but since no local cause could be found for the bleeding it was considered to be a medical case, and the patient was admitted under the care of Dr. Duckworth. For two years and three months she had been passing blood and slime daily. Whilst in the hospital the bowels acted several times a day, blood being always passed, usually about a teaspoonful with each motion. She generally had to strain a good deal, but had not especially noticed any protrusion, but had an idea that 'something' might occasionally come down. She never had any pain in the bowels or about the anus. On admission into Elizabeth Ward she was very weak and anæmic. After a purge and thorough injection of soap and water, the part was examined by Mr. Cripps. The anus appeared normal, but on introducing the finger the sphincter was weak; by gently drawing on the parts with the finger and asking the girl to strain, about half an inch of mucous membrane was everted, when by a sudden straining effort between two to three inches of the bowel shot out, forming a typical prolapse. On the summits of the rugæ could be seen several shallow ulcers varying in size from one-eighth to one-quarter of an inch in diameter, blood immediately began to ooze from the margin of two or three of the ulcers. On the 14th of March, Mr. Cripps operated on the patient by drawing four lines of cautery along the bowel, the anal margin in the middle line behind being also cauterized. A pad and bandage was applied; an egg and milk diet ordered; and the patient to have a grain of opium every eight hours to keep the bowels confined. The patient was on no account to sit up, and if she required to pass a motion was to do so lying on her side without straining. 16th. Bowels open twice to-day. 17th. Motions quite liquid, constantly running away without control. 31st. Doing well. Bowels open daily and motions soft; no blood or prolapse since the operation. April 18. Has been up daily since the 9th; bowels open daily, solid; quite free from blood and slime; ordered still to pass her motions in the recumbent position. A week later she was discharged with her general health improved, feeling much stronger, there being no trace of blood or other local trouble."

In discussing the treatment of procidentia recti, it must be considered, firstly, as to how the prolapse, especially that which occurs in children when partly strangulated by the sphincter, is to be reduced; and, secondly, what remedies can be applied to prevent its recurrence.

The child being laid across its mother's knee, in such a position that the buttocks are raised and the head lowered, the protruded part being covered with vaseline should be gently pressed upon with the tips of the fingers of both hands. If the prolapse be small, and has but recently come down, it will generally slip back with the greatest ease after a few seconds of pressure. It sometimes happens that it cannot be reduced on these easy terms, for, owing to the contraction of the sphincter, the protrusion has become œdematous and greatly swollen. Nevertheless, if the part be kept firmly pressed upon by a soft sponge for five or ten minutes, it will often so reduce the swelling as to admit of reduction of the bowel. In one case in which I had some difficulty in replacing the gut, I was enabled eventually to accomplish it by wrapping a piece of lint round the index-finger, and then, by putting the point of the finger into the protruded canal of the gut, pressed it gently upwards, whilst manipulating the part with the opposite hand. The bit of lint being dry, stuck as it were to the mucous surface, enabling me to carry it up with the finger. I then withdrew the finger from inside the lint, which was temporarily left within the bowel. All manipulation in such cases should be very gentle, as, before now, fatal consequences have followed violence in replacing a prolapsed bowel.

Cruveilhier[1] narrates a case of a man, aged 60, who for some time had had a prolapse which he had been able habitually to reduce himself; but on one occasion he could not reduce it, and applied at the Hôtel Dieu. The protrusion was then congested, and the size of the fist. After prolonged and forcible efforts the bowel was reduced, but on the following day vomiting set in, and he succumbed four days later.[2]

There will be but little chance of permanently retaining the gut in children so long as any condition such as phimosis or stone remains unreneved. Assuming that no such condition exists, or has been remedied, when the part has been reduced the greatest care should be taken to prevent a recurrence of the prolapse, for if the bowel can be retained for a certain period the tendency to prolapse will be remedied. It answers well to keep a firm pad against the anus by means of a broad piece of strapping applied like a perineal bandage, or the nates may be forcibly pressed together by a piece of strapping passed transversely across them. The child should on no account be allowed to pass its motion in the sitting position. The motion should be passed with the patient lying on the side, and if the anus be drawn by the fingers a little to one side as the motion is passing, it will generally prevent the descent of the bowel in the act of defecation. In children the general health must not be neglected, and I like to give a teaspoonful of cod-liver oil three times a day, which while nourishing the child softens the motions, diminishing the chance of straining.

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[1] Traité d'Anatomie pathologique générale, tom. i. p. 553.

[2] Roche (Revue Méd. Chir., 1853) reports the case of a woman, aged 46, who had suffered for twelve years from prolapse which one day became strangulated. The doctor made a prolonged attempt to reduce it; whilst the reduction was being attempted, the patient made a violent straining effort causing the rectal wall suddenly to split, and through the rent thus made the whole of the large, and a considerable part of the small, intestine were extruded on to the floor, the patient dying in a few hours.

When a prolapse has occurred suddenly and but once, there is a fair prospect, if precautions be taken immediately, that it may not recur. On the other hand, if the prolapse be chronic, always coming down at stool, it may not only be impossible to cure it by palliative means, but there will be a gradual tendency for the prolapse to increase in amount. Until recently, extensive prolapse was considered to be incurable, but fortunately among the rapid advances in surgical science may be included the treatment of these cases, which chiefly, owing to Van Buren's writings, can now be generally cured by a safe and simple operative procedure. In order to understand the *rationale* of the method of cure, it must be remembered that prolapse generally commences by the slipping of the mucous membrane away from the other coats of the bowel. The mucous coat is attached to the muscular coat by a loose network of fibrous tissue, so that even under ordinary circumstances there is a considerable amount of mobility of the one coat upon the other. "Partial prolapse" is the result of this mobility being greatly exaggerated by the gradual stretching of the submucous tissue. In the "complete prolapse," after the mucous membrane has slid as far as possible, it drags upon the muscular coat, thus producing the complete eversion of the bowel. It is important then to bear in mind that the one form is but an aggravation of the other, and that they both may commence in a similar way. The indication for treatment is to devise some method by which the laxity of the connection between the muscular and the mucous coat can be remedied, and the two bound more firmly together. Nature provides a ready means of accomplishing this end by an inflammatory process. The effect of inflammatory exudation into the loose connective tissue between the muscular and mucous coats is the formation of a new contractile fibrous material, which binds the two firmly together. This process can frequently be observed even in the ordinary operation for piles, where it may be noticed that the mucous membrane beneath the seat of ligature which was formerly movable, becomes adherent to the subjacent tissues.

In cases of prolapse, it remains for the surgeon to devise the means of setting up the amount of inflammation to effect the cure. This can be accomplished either by nitric acid or cautery. The patient being placed in the lithotomy position with the prolapse reduced, a large-sized Sims' speculum is introduced into the bowel, and then, with Paquelin's cautery, at a dull red-heat, a line is traced in the long axis of the bowel, commencing three or four inches from the orifice, and terminating on the muco-cutaneous surface of the anus. The bulb of the cautery should be a sixth of an inch in width, and bent abruptly at right angles close to the end. Four lines may thus be traced, one along the back of the bowel, one along its front, and one along each side, the speculum being shifted as may be necessary.

The cautery should not be carried too deeply, only sufficiently to thoroughly sear the mucous surface. A modification of the above operation is that of drawing four lines of cautery on the surface of the prolapsed membrane, which is pulled down for that purpose with vulsellum forceps, and then replaced.

After this treatment the patient should be kept at least three weeks or a month in the recumbent position, in order to give time for consolidation to take place. A motion should only be allowed every third or fourth day, after the fæces have been thoroughly softened and broken up by an oil-and-water injection, and must be passed as the patient lies on his side.

The operation may have to be repeated, if necessary. Nitric acid may be substituted for the actual cautery in burning the longitudinal lines. The enormous prolapse in Case 21 was cured by three applications of acid in this way. From subsequent experience, however, I do not like the acid so much as the cautery. It is more uncertain, and not so easy to control as to the depth and extent of its action, and cases are recorded in old persons of extensive sloughing and hæmorrhage following its too free application. If care be taken to avoid the skin with the cautery, remarkably little pain follows the treatment described.

In slight cases of prolapse, it will generally be found that the hæmorrhoidal plexus is considerably dilated, even if not amounting to actual piles. Such cases can readily be cured by ligature, which is applied to the prolapsed membrane in an exactly similar manner as when operating for hæmorrhoids, the prolapsed portion being divided into four or five segments, each of which is tied separately.

CHAPTER V.

RECTAL ABSCESS.

THERE are four situations in which matter forms about the rectum.

First, the abscess found beneath the muco-cutaneous folds of the anus: the circum-anal or marginal abscess.

Secondly, that which is more deeply seated by the side of the anus: the ischio-rectal abscess.

Thirdly, the abscess which forms in the rectal wall between the mucous and muscular coats; the inter-mural abscess.

Lastly, the abscess found in the pelvis between the rectum and the neighbouring structures: the circum-rectal abscess. It is necessary to clearly recognize these varieties, the position of the matter materially influencing the course of the case.

The circum-rectal abscess forming in the lower part of the pelvis will be specially considered in a subsequent chapter. So, for the present, we will confine our attention to the first three varieties. The following are some of the common causes leading to the formation of abscess in the rectal neighbourhood:—Traumatism, thread-worms, ulceration, inflamed external piles, tubercular disease, malignant disease, and stricture. Notwithstanding this somewhat long list, the actual starting-point of the abscess is from inoculation of the submucous tissue by some foreign or poisonous matter introduced, either directly by a wound of the part, or more remotely as a sequence to ulceration.

Owing to the mechanism of the sphincter muscles, foreign bodies, such as fragments of bones, &c., which have traversed the whole length of the alimentary canal without meeting with obstruction, become arrested in the lower part of the rectum, and are there apt to cause puncture or abrasion of the mucous lining, a lesion which, I believe, is frequently the starting-point of an abscess. One is extremely familiar with the abscesses which form about the fingers and palm of the hand as the result of pricks, splinters, &c. The wound in these cases is often so small as to escape detection. So, too, in the rectum the initial lesion is nothing more than a minute prick, the foreign body causing it probably passing away with the motion. Occasionally it is possible to observe the whole sequence of events in these cases, as in the following instance :—

Case 24.—E. G. applied to the casualty department at St. Bartholomew's for a sharp pricking pain in the rectum, which he had had for two days. Upon examination, I found a small spicula of bone lying transversely across the bowel. Without the least difficulty I dislodged and removed it with my finger, and since there was no bleeding, it seemed possible that the mucous membrane had not been perforated. However, a week later the man applied again with a hard tender swelling in the ischio-rectal fossa, which proved to be an abscess. This was opened, but a fistula resulted. Of course, it is not often that the foreign body will be actually caught, as in the above case, *flagrante delicto*, but it seems a fair inference that the abscesses which suddenly form about the rectum in otherwise healthy persons owe their starting-point to some such lesion. The small superficial abscess that originates around the anus (circum-anal) will often be found secondary to inflammation of an external pile, or from inflammation starting in one of the anal sebaceous follicles. The abscesses forming in phthisical patients will be considered in the chapter on Fistula. The amount of disturbance caused by a rectal abscess varies greatly. When the abscess is of slow formation, there may be scarcely any pain at all, the swelling and difficulty in passing the motions first calling the attention of the patient to the part.

Brodie narrates the case of a physician in large practice in London, who felt very ill, languid, listless, and unfit for business, and in the middle of the day, in consequence of headache and an incapacity for exertion, wanted to go home and lie down for an hour before he could finish seeing his patients. One afternoon, intending to walk home, he had sent away his carriage. He found something give way, and burst into his small-clothes, and on his return he found that it was a putrid abscess—fistula. He went through an operation for it, and got well. In other cases the pain may be acute, accompanied by considerable constitutional disturbance. The small abscesses forming round the anal margin are often more painful than the larger ones situated beneath the mucous membrane, or in the ischio-rectal fossa.

The trouble generally commences with a sharp pricking sensation, which is soon followed by an aching pain accompanied by throbbing. As the abscess progresses, so does the pain increase, sometimes being so severe that the patient is quite unable to sit, spending his time between walking about and lying down. At this period he may have a quick pulse and a furred tongue. Indeed, there are not wanting in the records of surgery cases in which the gravest constitutional disturbance has arisen from pus pent up in the rectal neighbourhood. If the part be now examined, and the abscess be in the ischio-rectal fossa, a hard, brawny swelling will be felt over the neighbourhood, which is very painful on pressure, especially so if the finger be introduced into the rectum. As the pus advances towards the surface, the superjacent skin becomes red, and fluctuation is detected.

Occasionally, these abscesses are very chronic, many weeks elapsing before the pus formation becomes apparent; but this is exceptional, and they are generally acute in their nature. I have known matter form so quickly in this position that it has actually come to the surface, and burst on the sixth day after the first onset of symptoms.

The pus from these abscesses is peculiar. It is generally thin, and has a dirty-water or greenish appearance, and it has a very fetid odour.

If left to itself, the abscess will burst either into the rectum, or through the skin round the anal margin. Even when it primarily bursts within the bowel, it often happens in the course of a few days that the skin where previously red and distended over the ischio-rectal fossa gives way, and thus the abscess is drained by two orifices, the one within the rectum, the other external to the anus. After discharging, the abscess cavity slowly contracts, and in some instances is completely obliterated. Unfortunately, however, as will be subsequently described, a permanent fistula often remains.

The inter-mural abscesses forming within the rectum between the muscular and mucous coats are comparatively rare, yet they are important, as they are certainly one of the causes of blind internal fistulæ. They may not cause much pain, nor is there any hardness to be detected outside, and for this reason they are apt to be overlooked until they burst, though a diagnosis can be readily made by introducing the finger.

Case 25.—J. G. was admitted under the care of Mr. Tom Smith.[1] He was a strong, healthy man, but had for some time been troubled with oxyuris vermicularis. He had noticed some tenderness about the rectum, with difficulty in passing his motions. On examination with the finger a soft elastic swelling, obviously an abscess, could be felt beneath the mucous membrane, about two inches up the bowel. There was no hardness to be detected, either round the anus or in the ischio-rectal fossæ. Two days later the abscess broke, and pus discharged freely from the bowel for a few days. On the ninth day all discharge had ceased, and the patient left the hospital apparently well.

In such cases the abscess should of course be opened, but an internal fistula may remain. There is seldom much difficulty in making the diagnosis of an abscess in the rectal neighbourhood. Occasionally, however, some difficulty may arise in determining whether its source is in the rectum, or in the urethra, for sometimes abscesses will be found in the rectal neighbourhood which originate from some prostatic or urethral trouble, but the commonest place for a urethral abscess is in the perinæum anterior to the triangular ligament. Such abscesses result from the leakage of a little urine from the urethra into the surrounding tissue, and are generally secondary to a stricture. It occasionally happens that a leakage may take place behind the triangular ligament. In such circumstances, instead of the abscess being a perineal one, it may present in the anterior wall of the rectum opposite the prostate. Here is an instance in point :—

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[1] Henry Ward Register, vol. vii. p. 407. (Notes by author.)

Case 26.—T.S.[1] was admitted into St. Bartholomew's on Nov. 4, for stricture of the urethra, the symptoms of which had commenced eight months previously. During the last month the symptoms had increased. He suffered much pain about the prostate, and had to get up several times during the night to pass water. He had a temperature of 102°. The stricture was near the meatus, and would only admit a No. 1 catheter.

Nov. 8.—Temperature still raised. On examination of the rectum the prostate was enlarged, and felt very tender.

Nov. 15.—Severe rigor. Feels very ill. Temperature 105°.

Nov. 16.—Free discharge of pus from the

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[1] Henry Ward Register, vol. vii. (Notes by author.)

rectum, which gave him great relief. On the following day, on examination with the finger at two inches from the anus, a hole could be felt in the anterior wall of the rectum of sufficient size to admit the finger into what proved to be an abscess cavity between the rectum and prostate. Small quantities of pus continued for many days to be discharged from the bowel. Six weeks later the opening of the abscess cavity had almost closed, a mere fistulous track remaining.

In such a case, owing to the presence of stricture, there is little difficulty in determining the source of the abscess which burst into the rectum. It is but seldom that there is a difficulty in diagnosis, though a puzzling case may occasionally be met with.

Case 27.—Mr. H. consulted me under the following circumstances:—For some days he had suffered considerable uneasiness about the rectum, especially feeling pain at the time of defecation. Upon examination, I felt just anterior to the anal margin, and slightly to the left of the middle line, a small but very hard swelling about the size of a hazel-nut. On introducing the finger into the rectum, the swelling could easily be felt beneath the mucous membrane in the anterior wall of the rectum. The patient had never had stricture of the urethra, and could pass his water with perfect ease and freedom. I advised him to apply a poultice to the part, and to see me again the following day. I did not, however, see him till a week later, when he stated that three days after seeing me something suddenly gave way in the rectum, for he had a slight discharge, and the pain which had been increasing entirely disappeared. Upon careful examination I could find no trace whatever of the hardness previously described. Three months later he again consulted me for the swelling, which had reappeared exactly in the original spot. But, since on this occasion he suffered no pain, he would not have anything done to the swelling, which again spontaneously disappeared after a week or two. Nevertheless, a month later it appeared for the third time, being on this occasion larger and much more painful. On examination under chloroform, I could feel a hard tubular swelling beneath the anterior wall of the anus an inch in length, lying with its long axis in a line with the bowel. As before, the apex of the swelling was most prominent beneath the perinæum, just anterior to the anus. At one point, three-quarters of an inch within the bowel, there was a puckering of the mucous membrane, which appeared to be adherent to the swelling, and was doubtless the point at which it had previously broken into the bowel. A bent probe would not, however, enter it.

I incised the swelling, expecting to let out a drop of pus, but nothing escaped. On the following day a small quantity of urine escaped by the bowel. The slight wound made by the incision soon healed, with the exception of a pin-hole aperture at the extreme verge of the anus. From this aperture, each time the patient passed water, a few drops of urine escaped. Suspecting that the patient might have stricture of the urethra, I passed a catheter, but found that if the urethra narrowed at all it was only to a very slight extent. For some months a drop or two of urine would escape from the opening on his making water, but the fistula eventually closed, and he has never had any further trouble.

It would be out of place in this work to go into the pathology of urinary fistula, but I mention the foregoing case in some detail as showing how closely at times the symptoms simulate blind internal fistula of the rectum.

Ischio-rectal abscesses should be opened as early as possible, and I think it quite right that an incision should be made into the hard swelling, even before actual fluctuation be detected. It is a mistake to wait for these abscesses to burst of themselves, for extensive damage may result from the undermining and sloughing of the skin; such, for instance, as in the following case at the hospital which my colleague, Mr. Bruce Clarke, asked me to see :—

Case 28.—W. W., aged 65, stated that he was quite well till three weeks ago, when he was suddenly seized with pains about the rectum, and an abscess formed, which broke a fortnight later. Upon examination, the skin around the anus and inner part of the buttocks was in a swollen, brawny condition, and of a dark red colour. On the right side was a huge circular opening, two inches in diameter, from which the skin and subcutaneous tissue was completely destroyed, exposing the gluteal muscular fibres. On the opposite side was another circular opening, though not quite so large. A probe could be passed for a considerable distance all round the openings beneath the undermined integument, and right across the perinæum from one side to the other in front of the anus. An early incision would probably have in this instance prevented such extensive destruction of tissue.

In opening ischio-rectal abscesses, if possible, ether should be administered. The patient lying on the side where the abscess is situated, the upper leg should be bent at the knee and thigh, when the most prominent part of the abscess being selected, a free opening is made with a sharp-pointed scalpel. It is well to stand clear of the pus, which often squirts out a considerable distance, and with which it is very unpleasant to be sprinkled. If the abscess be not prominent, the forefinger may be passed into the bowel, and by pressure be brought nearer the surface. It is generally directed that the incision should be made in a line radiating from the anus. I prefer, however, to carry the incision directly downwards, for by this means pocketing of the pus is prevented, and more effectual drainage obtained.

The question naturally arises as to whether, by any plan of treatment, the abscess can be cured without degenerating into a fistula. My belief is that, although by judicious management a fistula may sometimes be prevented, it more commonly happens that, even with the most careful treatment, it is impossible to arrest its formation. It is well to explain this to patients, who might otherwise imagine that their subsequent fistula was in some way due to the operation employed for their relief.

The treatment indicated is to secure free drainage from the external opening. For this purpose the original opening should be made fairly free, and I commonly employ a piece of india-rubber tissue to keep the opening patent. It is not sufficient to use a mere narrow strip of single thickness, it should rather be folded three or four times, after the manner of a candle-lighter. It must be changed daily, and the cavity well syringed out with a weak carbolic solution, or what is better, with the boro-glyceride lotion, ʒiv to ℥viij.

The little superficial marginal abscesses should also be treated by incision. These little abscesses, although they may not contain more than a few drops of pus, are often exquisitely tender. If left alone, they will break in a day or two by a small opening just at the anal margin, leaving a little cavity in the connective tissue immediately beneath the muco-cutaneous membrane.

At first, if the probe be introduced, it will be found that the cutaneous structures are detached over an area perhaps the size of a fourpenny-piece. In the course of a week or two the part is generally completely healed, occasionally leaving as a remnant a small tag of hypertrophied cuticle, but sometimes a troublesome little fistula will result. At other times a channel with an opening at each end will remain, formed by a thin bridge of tissue a quarter of an inch or so only in length.

Gangrenous Inflammation around the Rectum.—Patients with broken constitutions, especially such as have spoilt their tissues by prolonged indulgence in drink and free living, may be attacked with phlegmonous inflammation of the parts about the rectum. In such cases the inflammation runs on to sloughing, or even gangrene of the skin and subcutaneous tissue around the rectum, and there is no tendency to the formation of a circumscribed abscess cavity. I remember a case at the Royal Free Hospital in which, owing to diffuse cellulitis, the rectum was left almost isolated by the sloughing of the skin and subcutaneous tissue of the fossæ. Such cases are grave in their nature, indicating some depraved constitutional condition. If seen early, which rarely happens, they should be treated by free incision, with the hopes of preventing sloughing of the skin. Great care must be taken in these cases to support the patient's strength with beef essence, and other forms of concentrated foods. Opium should also be administered in half-grain doses every four hours, if the urine be free from albumen. The parts should be covered with a warm charcoal poultice, and cold should on no account be applied as a local application.

CHAPTER VI.

FISTULA IN ANO.

THE consideration of fistula in ano naturally follows on that of abscess, to which, I believe, it invariably owes its origin. It is, in fact, the remains of an abscess cavity, the walls of which have shrunk into a tubular channel. If the fistula be cut open, it will be seen to be lined with a smooth gelatinous membrane, which an examination under the microscope shows to consist of a granulation tissue exactly analogous to that found lining the interior of a chronic abscess. The leucocytes forming the surface of this membrane are but loosely adherent, and constantly becoming free, form the chief part of the pus which drains from the fistula.

One of our best authorities on rectal disease[1] states that fistula, at all events in hospital practice, is the most common disease affecting the rectum, and that out of 4,000 consecutive rectal cases observed at St. Mark's Hospital, 1,208 were fistula and only 965 cases of hæmorrhoids. This statement is not in accordance with the experience of a general hospital, for at St. Bartholomew's the proportion of cases applying with hæmorrhoids is much larger than those with fistula. Indeed, the numbers are as two to one. The discrepancy between the figures of

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[1] Allingham, On the Rectum, 4th edition, p. 12.

St. Bartholomew's and those of St. Mark's being probably explained by the fact that St. Mark's is known to the London poor as the "fistula hospital," and therefore attracts an undue proportion of patients with that disease, thinking, perhaps, that exceptional and special skill is required to deal with their case, while they consider "the piles" not beyond the experience of the ordinary hospital surgeon.

The sequence of fistula to abscess is one which every practical surgeon is constantly observing; but yet the misconceptions which some authors still hold as to the origin of fistula are astonishing. Thus, a recent writer in the Boston Medical Journal, "insists upon the fact that an anatomical consideration of the rectum shows that the diverticulæ of Morgagni and the internal hæmorrhoidal veins be an adequate and obvious source of fistulæ."

I would advise any surgeon who may still be in doubt as to the starting-point of rectal fistulæ to keep memoranda of all the cases of ischio-rectal abscess he is called upon to treat, and I will undertake to say that more than half of these end in the establishment of a fistula in ano; and further, if, when he is consulted by patients with fistula he will take the trouble to question them carefully, he will find that their trouble almost invariably commenced with symptoms of rectal abscess.

Much has been written as to the reason of abscess cavities in the rectal neighbourhood so commonly degenerating into permanent fistulæ instead of healing as under ordinary circumstances. Two explanations are offered, both of which play some part in the process. The one is, that owing to an internal opening within the bowel, small particles of fæcal material are constantly finding their way into the sinus, and where, playing the part of a foreign body, prevent the healing. The other, that owing to the frequent movement of the part by the sphincter muscle, sufficient rest is not obtained for the completion of the reparative process.

The fact of foreign matter finding its way into the fistula is not in itself a sufficient explanation, for, while it would account for the cases of complete fistulæ refusing to heal, it affords no explanation as to why the blind external fistula, that is, the fistula which has no communication with the interior of the bowel, should also fail in the reparative process, which, nevertheless, quickly heals when the sphincter is set at rest by division.

Fistulæ with considerable practical advantage have been divided into three varieties:—1. Complete fistula; 2. Blind external fistula; 3. Blind internal fistula.

In the first of these, the sinus extends from an opening through the skin external to the anus, to an internal opening through the mucous membrane within the bowel. In the second variety (external fistula) there is an external opening only, the fistula ending in a blind extremity having no communication with the interior of the bowel. In the third variety (internal fistula) there is an internal opening through the mucous membrane, but there is no external opening round the anal margin.

Complete Fistula.—This form is the commonest, nevertheless it is exceptional, for those who have

FIG. 5.

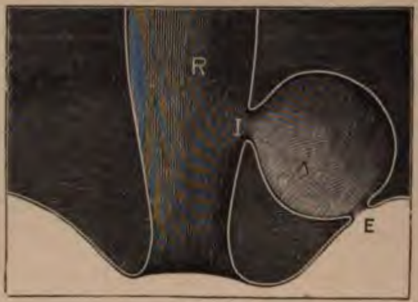


FIG. 6.

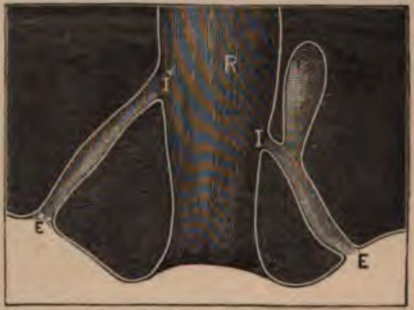
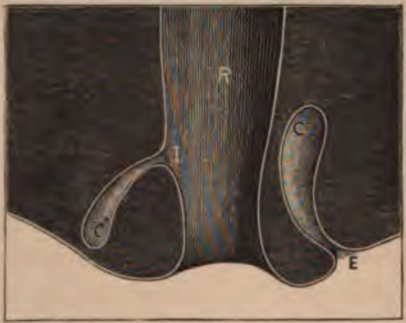


FIG. 7.



DIAGRAMS SHOWING THE VARIETIES AND FORMATION OF FISTULA.

FIG. 5.—R, rectum; A, abscess breaking both into the rectum at I, and through the skin at E.

FIG. 6.—On the right side is shown the abscess cavity contracted, and the method of formation of the cul-de-sac at C, extending above the internal opening I, is seen. On the left side is a complete fistula without any cul-de-sac.

FIG. 7.—R, rectum; C I, blind internal fistula; C E, blind external fistula.

To face page 145.

had little experience in rectal examination to discover the internal opening, and to be able to pass a probe without using force from the external opening into the cavity of the bowel. Since the discovery of the internal opening is of considerable importance in the treatment, it may be well to study its situation, the reason of its formation, and the cause of the difficulty so often experienced in finding it. The diagram will help to explain this. Figure A represents an abscess in the ischio-rectal fossa, the pus from which is making its way to the surface in the line of least resistance, which appears generally to be both outwards towards the surface of the skin over the fossa, and inwards towards the cavity of the bowel between the sphincter muscles. Thus, there are two points towards which the abscess is simultaneously making its way, the one towards the cavity of the bowel in the furrow between the sphincters, the other towards the skin at a distance of three-quarters of an inch or more from the anus. Notwithstanding that the abscess will first break at one of these points only, the skin or mucous membrane, as the case may be, at the second point will have become so thin that it gives way by ulceration, even after the actual pressure of the pus has been relieved. It consequently happens that, although the abscess primarily bursts at one spot only, a second opening becomes subsequently established. From this it will be seen that a probe passed into the external opening will have to traverse a portion of the old abscess cavity before it finds its way through the second opening into the bowel.

If the abscess cavity, as sometimes happens, has shrunk to a mere channel, at either end of which were the external and internal openings, of course there would be no difficulty in passing the probe through. The abscess, however, as already shown, does not generally break into the bowel at its apex or highest point, but rather by a hole through its side, so that on the pus being evacuated and the cavity contracting, a cul-de-sac will be formed running beneath the mucous membrane considerably higher than the internal opening. It is into this cul-de-sac that the probe so easily passes, affording a ready explanation as to why the internal opening is sought for in vain, for instead of being at the apex of this cul-de-sac, it is in reality situated much nearer the anus.

In examining a case of suspected fistula, the external orifice will be generally at once apparent. In long-standing cases it may be in the centre of a little raised papule. Sometimes the orifice is very small, and it requires a careful search to find it. In such circumstances, by carefully feeling all round the anal margin, the site of the fistula will be detected by the subcutaneous induration. This is sometimes so distinct that it feels like a hard cord. The orifice when discovered may be temporarily blocked up, but on a little pressure will easily admit the probe. It is well to have two or three of these handy, for it may happen that a fine probe will readily detect a sinus which a larger one had failed to enter.

In examining a fistula the probe should always be passed before introducing the finger into the bowel, otherwise the contraction of the sphincter on the finger will tend to draw the fistula out of the straight line, causing a difficulty in the passage of the probe. Bearing in mind the probable situation of the internal opening, that is to say, at a spot not more than half or three-quarters of an inch within the anal orifice, and slightly guiding the probe in that direction, it will often at once slip into the bowel. If it does not do so, the left forefinger introduced into the bowel may detect the internal opening by the line of hardness or a dimple-like feel.

Another method of examination is to pass the probe as far as possible into the cul-de-sac, and then gently to withdraw it, whilst its extremity is pressed towards the finger in the rectum, when it may slip into the bowel as it comes opposite the opening. Milk injected through the external opening, and then observing by a small speculum the point at which it flows into the bowel, has also been used as a means of finding the internal orifice.

In old neglected cases of fistula there is no longer the simple condition of a single channel, for owing to the retention of matter and the consequent formation and burrowing of secondary abscesses, the parts in the neighbourhood of the anus may become riddled with channels radiating in all directions from the line of the original fistula. Such tracks may occasionally extend three or four inches along the buttocks; more rarely they pass backwards towards the sacrum, or not infrequently they will run forward towards the perinæum.

However numerous may be these secondary tracks, they seldom communicate with the bowel, except by a single internal opening. In such cases there is generally a red brawny condition of the skin over the area of the subcutaneous tracks, which sometimes can be traced as hard indurated lines. At other times the skin is of a bluish colour, thin and undermined, communicating to the finger a soft boggy sensation.

A special form of fistula has been described under the name of horse-shoe fistula. In this case the original abscess appears to have formed half round the bowel behind, so that when it breaks externally the probe will pass both towards the right and left side of the gut, a semicircular channel existing which involves half the circumference of the bowel. It may happen in such a case that the internal opening is situated on the opposite side of the bowel to the external, or there may be occasionally two internal openings, one on each side.

Blind External Fistula.—Many fistulæ are supposed to be blind which are in reality complete, the internal opening having escaped detection. Nevertheless, there will be found a considerable number of cases of true external fistulæ in which there has either never been an internal opening, or it has become closed. If a fistula has existed for years, giving little trouble without being liable to inflammation, it will most commonly be found that it does not communicate with the bowel. External fistulæ owe their origin to an abscess in the same manner as complete fistulæ, and occasionally they are the result of the retention of a foreign body following a wound in the neighbourhood.

Case 29.—A man admitted into St. Bartholomew's[1] had a blind external fistula that had remained after a wound of the part with a pointed stick. There was a history of an abscess, and no internal opening could be found. Upon laying open the fistula there was discovered at its apex a piece of grey flannel shirt, three-quarters of an inch square, which doubtless had been carried there on the point of the stick at the time of the accident.

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[1] Henry Ward Register, vol. vii. p. 121. (Notes by author.)

With the exception of the internal variety there is little likelihood of the symptoms of fistula being overlooked. There is always some slight weeping or discharge from the part unless the opening be blocked. At such times a little extra pain and swelling will occur from the collection of retained matter. Then the discharge suddenly breaks out again in an increased quantity, while the swelling and tenderness simultaneously disappear. The amount of discharge from a fistula varies greatly. In slight chronic cases the discharge may be only just sufficient to stain the linen, while, if the disease be more extensive, it may be so profuse as to keep the patient constantly wet and in discomfort. Not only does the amount of discharge vary in different cases, but it is subject to great variation from time to time in the same individual. For weeks, or even months, there may be no pain, and only the slightest discharge, then somewhat suddenly the fistula will become painful, the part feeling hard and swollen. This indicates an increased inflammatory action, to be followed by a fresh abscess or a more copious secretion. If the secretion from a fistula be very free, I always suspect a considerable cavity to exist, and have often found in such cases that, on passing a probe through a small external opening, it can be swept round a considerable area beneath the detached skin.

Fistulæ may form about the anus originating in causes disconnected with the bowel itself. Such fistulæ may occasionally be the result of caries of some portion of the pelvic bones, or even of the vertebral column. Recently (Case 30) I examined a little girl of 4 years old who was brought to the hospital on account of a discharging fistula, the opening of which was over the ischio-rectal fossa half an inch to the right of the anus. Upon further examination the child was found to have an angular curvature with caries of the lumbar vertebræ, with which the sinus communicated.

Abscesses originating in the deeper part of the pelvis frequently break into the rectum, the pus being discharged by the anus (see Cases 49, 61), but much more rarely such abscesses may find their way to the surface external to the rectum, thus simulating an anal fistula. It is important that this should be borne in mind, for a deep and dangerous operation has occasionally been performed in such cases without the least benefit to the patient.

Fistula in ano frequently complicates simple or malignant stricture of the rectum (see page 218). In such cases it would be a grievous mistake to overlook the initial lesion. I therefore strongly advise that the interior of the bowel in every case of fistula be examined by the finger, to prevent the possibility of such a mistake.

Blind Internal Fistula.—The origin of these fistulæ is the same as that of the complete variety, but the abscess breaks into the bowel only. Thus there is an internal opening, but no external one. These fistulæ are of great interest, for owing to their somewhat obscure symptoms they are frequently overlooked or mistaken for some other disorder. In these cases there is a certain amount of discharge from the anus, which varies considerably in amount, being some days slight and others more copious. There is a sense of discomfort in the lower part of the bowel, and occasionally there is pain of a smarting character. In fact, the symptoms very closely resemble those of ulceration, and a differential diagnosis between the two can only be made by careful examination of the part. Upon introducing the finger into the bowel, a ragged irregular spot, feeling like an ulceration with raised edges, may be detected. So far as I have observed, the opening in these internal fistulæ is considerably larger than in the ordinary instances of complete fistula. I remember, for instance, one case in which the opening was sufficiently large to admit the tip of the finger. Sometimes there is a very characteristic feature in these cases. The patient will notice from time to time a hard, tender swelling in the anal neighbourhood. This will be followed in a day or two by discharge of pus from the bowel, while at the same time the external swelling diminishes or disappears. This phenomenon may be again and again repeated, and points to the nature of the disorder.

If the part be exposed with the speculum, it will be found, on examination with the probe, that the mucous membrane in the neighbourhood of the opening is detached from the muscular coat beneath.

The detachment is most considerable towards the anus, so that if the probe be bent in the form of a hook and then introduced into the opening, its point may be felt beneath the mucous membrane close to the anal margin.

My experience of these cases of internal fistula is, that the lesion rather consists in the undermining of a considerable area of mucous membrane than a single distinct channel, which, however, doubtless occasionally forms.

Fistula in Ano, complicating Phthisis.—The connection between fistula in ano and phthisis is too frequent to admit of explanation as a mere coincidence, and I should say, from my observations at St. Bartholomew's Hospital, that from 10 to 15 per cent. of all cases of fistula are complicated with disease of the lungs. No very satisfactory explanation has yet been given why rectal abscess and fistula should occur more frequently in phthisical patients. It is probably to be sought partly in the fact that in strumous patients there is an increased tendency to suppuration from slight causes, and partly that the follicular ulceration of the mucous membrane of the rectum in phthisical subjects is a predisposing cause for abscess formation in the rectal walls.

The chief interest of these cases to the surgeon centres in the question—should they be subjected to operation? The answer to this depends on the relative proportion between the two diseases. If the lung trouble be but slight, while the fistula is troublesome and painful, there can be little question as to the propriety of operating. On the other hand, if the lung disease be advanced, and the cough troublesome, it would be very injudicious to operate on the fistula. The wound will frequently refuse to heal, causing perhaps even more trouble than the fistula it was intended to cure. The elastic ligature is especially suitable in these cases. I think it may often be safely employed, when it would be unwise to confine the patent to bed, which is necessary when operating in the ordinary manner. Although I have seen great advantage result from the operation in phthisical cases, especial care should be exercised in selecting a suitable occasion. If possible, summer weather should be chosen, or at least a period of cold damp weather is to be avoided. The administration of anæsthetics is a matter of considerable importance; when there is any question as to the condition of the lungs chloroform may be safely administered, but I consider ether inadmissible. The irritation ether causes may re-light dormant mischief in the lung, or even place the patient's life in immediate peril. It was only recently that I nearly lost a patient at St. Bartholomew's Hospital from this cause. Of course I was not aware at the time of the condition of the lung, or I should have had chloroform administered instead of ether.

Case 31.—The patient a year ago had an attack of blood-spitting, and had been troubled for several months with an obstinate cough. For the last six months he had been much better, with scarcely any cough, had gained flesh, and had done his work as usual. The day after ether was administered the cough became very troublesome. For six weeks his temperature ranged from 101° to 103°, his nights were restless, he sweated profusely, and rapidly emaciated, the expectoration being copious and purulent. At the end of this time the patient took a turn for the better, and was eventually discharged from the hospital in fair condition; but there can be no doubt that his life had been placed in considerable danger by the re-lighting of the old disease in the lungs.

I do not condemn the administration of ether from my experience alone, for Mr. Joseph Mills, the eminent chloroformist, who has probably had a larger experience of anæsthetics than any living practitioner, tells me that he has known similar instances of harm following the administration of ether in phthisical patients.

Treatment of Fistula in Ano.—This involves many serious considerations. In the first place, the patient will naturally inquire as to whether any surgical interference is necessary, and what would be the result if the disorder was left to run its course. It sometimes happens that a fistula forming in the ordinary way as the result of an abscess, will in a few weeks or months permanently close; or that the fistula, painful and troublesome at first, ceases to be, of any annoyance, with the exception of a little weeping from the external opening. Unfortunately, however, it is exceptional for a fistula once established to heal spontaneously, nor can a patient who has passed many years without annoyance from his fistula be sure against complications and trouble arising; a circumstance illustrated by the following case (32) which I attended with Mr. Charles Drake of Brixton. The patient, a gentleman, aged 44, after getting cold and wet during a day's hunting, eleven years previously, suffered great pain for some days about the rectum. An abscess then broke, giving great relief. From that time he had always had a discharging sinus. This gave him no pain or trouble until a month before he consulted me. The part then became uneasy and tender, and during the last few days had caused considerable pain. On examination at a distance of three-quarters of an inch from the anus, and on a level with its upper border, was a small elevated tubercle, in the centre of which was a fistulous opening. A probe passed readily into the sinus for three-quarters of an inch downwards and inwards, and there became arrested. The finger when passed into the bowel caused some pain, but no hardness was detected. I suspected, from the symptoms, matter to be forming somewhere, but I could not find its exact seat. I advised that the fistula should be laid open, both with a view to evacuating the pus, and effecting a permanent cure. The operation could not be fixed until some days later. Upon visiting my patient for the purpose of operating, I found that after considerable pain that morning he had had a free discharge of pus from the sinus.

On the patient being put in the lithotomy position under ether, I passed a probe downwards and inwards through the sinus, a distance of three and a half inches towards the sacrum, well on the outside of the bowel. On substituting a steel director for the probe, its end could be felt some distance from the surface, nearly on a line with the tip of the coccyx, a small incision being made through the skin over the point of the director, it was forced through. The whole of the intervening structures were then divided. It could be seen that a sinus three inches in length had been laid open, at the bottom of which was an irregular collapsed abscess cavity. The side of the rectum was exposed, but no opening could be found into it. However, I made an incision extending at right angles from the wound through the sphincter muscles. In this case the wound healed, and the patient was perfectly cured. Nevertheless, the operation was a severe one, owing to the extent of the incision, and the patient was confined to his room for many weeks. I have no doubt that, had an operation been performed years before, it would have been of a comparatively trifling nature. Moreover, I consider the patient lucky to have escaped the more serious complications from tunnelling of the tissue. It often happens that a neglected fistula becomes aggravated by the formation of secondary channels running in various directions from the primary one, and that a disease, at first simple and admitting of an easy cure, becomes a formidable disorder. It is by no means uncommon in hospital practice to find the neighbourhood of the anus riddled with fistulous passages, which sometimes burrow deeply beneath the gluteal muscles, or forwards towards the perinæum, while it occasionally happens that the continual irritation caused by a fistula in the submucous tissue will lead to rectal stricture. (See page 212.)

Having recognized the necessity of interfering with the fistula, let us consider the steps to be adopted for its cure.

Fortunately, by laying open the track and dividing the sphincter, we have a certain means of curing an uncomplicated fistula, but patients will often display a natural anxiety as to whether their fistulæ cannot be cured without an operation. In answer to this, it can fairly be said that this is sometimes possible, but the treatment will require the most constant and careful attention, and even then in a great majority of cases the patient must be prepared for failure.

In trying this treatment, the following principles should be kept in sight. First, that the external opening is perfectly free; secondly, that an attempt be made to excite healthy action in the fistula itself; and lastly, that the parts be kept as quiet as possible. To accomplish the first indication, a little plug may be gently inserted a quarter of an inch or more into the external opening. This acting like a foreign body soon enlarges the orifice, keeps it patent, and allows the discharge to flow by its side. Such a little plug can be readily made by taking a piece of gutta-percha, the size of a large pea, soaking it in hot water, and rolling it between the fingers into the shape of a diminutive mushroom, the little stalk being half an inch in length, the thickness of a steel knitting-needle. The flattened head prevents its slipping in, and it can be kept in place by a piece of strapping over it. The opening, if preferred, may be more quickly dilated with a piece of sponge-tent. To excite action of the fistulous passage, some surgeons advice the passage of a probe, on which a little nitrate of silver has been fused. This may be tried, but it is well to remember that it is sometimes followed by considerable pain and inflammation.

Another plan is to wrap a little cotton-wool round the end of a probe, dip this into carbolic acid mixed with equal parts of water, and wipe out the interior of the cavity. Should there be an internal opening of any considerable size, I believe that all attempts to cure by simple drainage will be absolute waste of time. There can be no doubt that, in the great majority of cases, the right treatment for fistula is that of laying the sinus freely open, and allowing it to heal from the bottom. Still there are exceptional cases in which it may be wise to pause before recommending this. Unless the local trouble be very considerable, no operation should be undertaken in those who are suffering from severe organic disease. Albuminuria, diabetes, cardiac or hepatic disorders, alcoholism, and advanced phthisis, are all conditions which add risk to an otherwise safe operation. As regards local conditions, it must be remembered how frequently fistula complicates cancer and rectal stricture. If either of these be present, of course an operation must not be undertaken. Supposing that we are satisfied that the patient is constitutionally sound, and the bowel with the exception of the fistula healthy, a few points of importance concerning the operation itself must be considered. Nothing is so unsatisfactory, after strongly advising a patient to submit to operation, as to find that within a few weeks of leaving your care the old symptoms reappear. Under such circumstances your patient loses confidence, and will seldom undergo a second operation at your hands. And there will be the somewhat small consolation of subsequently learning that a cure has been effected by some other practitioner, who succeeded by paying attention to some small matter you had overlooked. Even with the greatest care failure will occasionally occur. Nevertheless, by attention to details in the operation and in the subsequent treatment, the failures will be rare compared to the successes.

In the first place, it is of much importance to find the internal opening, if such exists, for if it be not included in the incision, it may remain as a point from which further trouble may arise. I do not mean to say that the cases will never do well in which the internal opening has been left, but that it is one of the causes of failure. A second matter of consideration is, as to the treatment of the fistulous cul-de-sac, which may run beneath the mucous membrane for a considerable distance above the internal opening. Syme,[1] Brodie,[2] Quain,[3] Henry Smith,[4] and many other equally high authorities, lay down the rule very positively that such a sinus may be safely left to take care of itself, and that it will certainly heal after the parts have been divided between the internal and external openings. On the other hand, Allingham[5] states, in an equally positive manner, that in the great majority of cases the patient will not be cured unless the whole sinus is laid open from end to end.

I have always, myself, been in the habit of dividing this cul-de-sac, and have never yet had occasion to regret doing so.

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[1] On Diseases of the Rectum, 3rd edition, p. 38.

[2] Brodie's Works, vol. iii. p. 545.

[3] Quain on Diseases of the Rectum, 2nd edition, p 117.

[4] Surgery of the Rectum, 5th edition, p. 11.

[5] Diseases of the Rectum, p. 39.

Besides the chief fistula, there are often others that run off at an angle, terminating in a cul-de-sac at some distance from the main channel. If these diverticula be not followed and laid open, they will often cause complete failure of the operation.

Sometimes sinuses burrow deeply for several inches into the gluteal region. When this occurs, with the view of avoiding severe and extensive incisions, Brodie recommends the following plan:—A probe is passed along the sinus from the external to the internal opening, and then by cutting down upon the probe an inch from the anus, an artificial opening is made. The portion of tissue between the new opening and the internal opening within the bowel is then laid open in the usual manner, the remainder of the sinus in the buttock being left untouched. The track thus left, relieved from irritating particles escaped into it from the bowel, heals without further treatment. In my own practice I have not hitherto adopted this plan, but should be inclined to try it should the sinuses be very deep, but I think as a rule they will be found to be superficial, and are best laid open.

Bearing these few points in mind, the operation may be proceeded with in the following manner:—

The patient having been previously prepared (see page 103), and being placed under ether in the lithotomy position, a small probe-pointed director is passed gently along the fistula and, if possible, made to emerge through the internal opening. If this opening be in the usual situation, and only a short distance from the anal orifice, the end of the probe, directed by the forefinger of the opposite hand, can by a little manipulation be made to project from the anus. The whole of the intervening parts are then divided by running a sharp-pointed curved bistoury along the groove of the director. If the internal opening be so high that the end of the director cannot conveniently be turned out at the anus, the intervening tissues may be divided by a strong pair of straight scissors, especially made for the purpose. The end of one blade of these scissors is made with a small knob to fit a groove in the director which it runs along, while the other is in the interior of the bowel. A third plan is to pass a piece of soft wood, rounded at the top and about the size of the finger, up the bowel. A piece of firewood, trimmed smooth with a penknife, answers admirably. The point of the director projecting into the bowel is pressed against this. A sharp-pointed bistoury is then passed along the director, and the point made to stick into the firewood. The two are then withdrawn together, the intervening tissues being consequently divided. In cases in which an internal opening does not exist, or at any rate cannot be found at the time of operating, the end of the probe must be felt for by the finger in the bowel, from which it is commonly separated by the mucous membrane only. Sufficient force must then be used to push the director through the mucous membrane, thus making an artificial opening.

When the main fistula has been laid open, careful examination should be made with the director to ascertain if a blind track runs further up the bowel. Unless this track runs dangerously high, it should be slit open with a pair of scissors, one blade of which is carried along in the groove of a director pushed up the sinus, the other being in the cavity of the bowel. Should the sinus run so high as to make it difficult to secure a wounded vessel, if divided, the operation may be completed by means of the elastic ligature. Having attended to any sinus that may run upwards, an examination should be made for lateral diverticula. Should any such exist, they must be followed up and laid open. I will here call attention to the extreme ease with which a probe may be passed along the loose connective tissue between the mucous and muscular coats of the bowel, although no sinus exists, so that in making such examination care must be exercised not to mistake artificial channels thus made by the probe for morbid sinuses.

It is well, too, to bear in mind, even when examining a case of fistula, how easily a probe will run along the submucous coat, otherwise an extensive sinus may be diagnosed when none really exists.

Having completed the division of the fistula, it is a good plan to snip away freely with scissors any undermined or overlapping borders of skin. Such borders if left have a low vitality, become congested and œdematous, and falling over into the wound greatly prolong the time required for its final healing. Any bleeding vessel should be secured with a fine ligature. Care in this respect will almost certainly prevent any trouble from recurrent hæmorrhage. A piece of folded lint may then be gently put into the incision, and a good pad of cotton-wool put over the anus, and secured with a firm T bandage. The following day the cotton-wool pad may be removed, the part thoroughly syringed with a little warm weak carbolic lotion. I leave the piece of lint, which is generally adherent to the surface of the wound, till the following day, when it becomes loosened and readily separates. After this, the wound may be dressed daily with a little strip of lint spread with eucalyptus ointment.

The after-treatment of a fistula is at least of as much importance as the operation itself, and through want of care in the dressing the whole benefit of an operation may be lost. If the discharge pockets, or does not drain freely, the edges of the wound will become undermined, and lateral channels will form. But the mishap which most frequently occurs, and which requires to be specially guarded against, is that the granulations just at the verge of the anus bridge over and adhere, leaving a channel below, and thus in effect again producing a fistula. The surgeon should himself do the dressing daily in a good light, a single piece of lint being gently laid between the cut surfaces. Should the superficial granulations become accidentally adherent, they will readily give way if a probe be lightly run over them. On the fourth day the bowels may be opened by the administration of a small dose of castor-oil. Patients anxiously inquire before the operation as to how long they will be laid up. This in great measure depends upon the magnitude of the operation. Until the patient is under an anæsthetic and the sinus actually laid open, it is impossible to foresee the extent to which incisions may be necessary. In an average case the patient will be a fortnight in bed, and confined to his room for another couple of weeks. But it may happen, if the operation be a severe one, or any cause occur to retard the healing, that he may be invalided for a much longer period before the wound is soundly healed. This uncertainty, if explained to the patient before the operation, will often save much annoyance and dissatisfaction.

Complications during the Healing Process.—At first there is always loss of power over the sphincters, with consequent inability to retain wind and fæces. This power quickly returns, and is generally completely restored by three weeks. If the divided fistulæ are extensive the period may be much longer. The surgeon need have no undue anxiety even if many weeks elapse, for there is a tendency to gradual restoration of the lost power, so that although at first matters may look unsatisfactory, by six months or a year the sphincter will be as strong as ever. Nevertheless, it is well to recognize the fact that a permanent weakness occasionally remains, in which circumstance the patient may be in a deplorable position, being afraid to trust himself in society from the involuntary escape of wind. Owing to the special severity of some fistulæ, the cure can only be effected at the risk of some subsequent incontinence. But by remembering a few points when operating, such a result will be very exceptional. Complete division of the sphincter in more than one place should be avoided. Thus, in the exceptional cases in which two distinct fistulæ pass beneath the sphincter muscles, it becomes a choice of evils as to whether both tracks should be divided with the risk of incontinence, or one only with the chance that the fistula

FIG. 8.

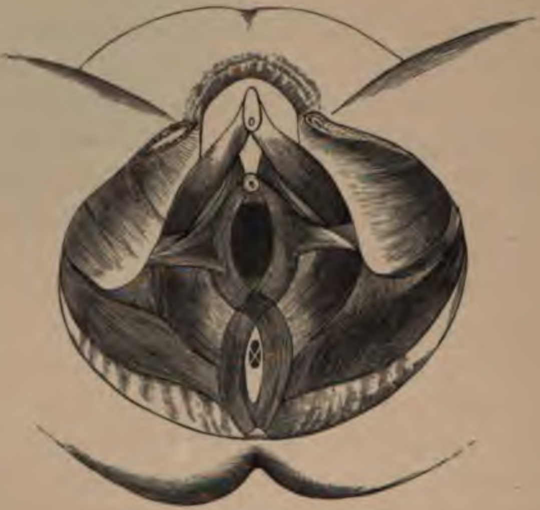

FIG. 9.

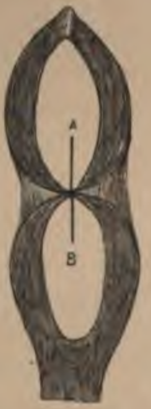

FIG. 10.

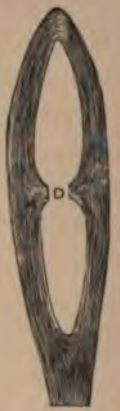

FIG. 8 (after Quain).—Shows the blending of the fibres of the sphincter ani with those of sphincter vaginæ at the tendinous centre of the perinæum This centre serves as a fixed point from which both sphincters act. If this centre be cut through in operating for fistula, as shown by the line A B, fig. 9, the power of the sphincter will be destroyed, and the contraction of its fibres would cause the part at D, fig. 10, to open rather than to close.

To face page 165.

may not be cured. I consider the second risk the less of the two, for it will generally happen that on one sinus being completely laid open and the sphincter paralyzed, the other will spontaneously close.

In women, owing to the manner in which the sphincter ani and the vaginal sphincter decussate (see woodcut) beneath the perineal raphé, if the sphincter be completely cut through at the site of decussation, the point of resistance from which it acts will be lost. This fact is illustrated by the incontinence which follows a ruptured perinæum. I consider it a rule, therefore, in operating for fistula never to completely divide the sphincter in this position. Mr. Henry Smith, who enters more thoroughly into the question of incontinence following the operation for fistula than any other writer, states his belief that "the high division of the muscular fibres of the bowel is the commonest cause of this want of control." With this I entirely agree, and I have observed that in any operations about the rectum the want of control depends much on the height to which the bowel is divided. In operating for fistula, it will be very seldom necessary to divide all the coats of the bowel to any height, for the sinus which extends upwards beyond the internal opening is generally beneath the mucous membrane only.

I had an excellent opportunity of observing one of the causes leading to incontinence in a patient who applied at the casualty department,[1] May 20, 1884. The case (33) was that of a young man who had been operated upon seven months previously for fistula. He complained that since the operation he had suffered great discomfort and partial loss of control. If the motion was the least soft, he had great difficulty in retaining it; while, if attacked with diarrhœa, he had no control at all. He also stated that if making any violent effort, such as lifting a weight, a motion or wind was liable to escape involuntarily. Upon examination it was seen that the sphincter and cutaneous tissue had been extensively divided on both sides about midway between the anterior and posterior commissures. The lines of incision could be traced by a band of scar tissue a fifth of an inch wide extending into the skin, three-quarters of an inch on either side of the anus. Upon passing my finger into the bowel and telling the patient to contract the sphincter and levator ani muscles, a very slight and feeble compression was exerted apparently by the upper margin of the sphincter, while a groove or a narrow sulcus could be felt on each side of the bowel corresponding with the lines of incision through the sphincter. At the same time, the cutaneous cicatrix was drawn slightly inwards towards the rectum. Upon closer examination, I satisfied myself that the inability of the sphincter firmly to contract was owing to its fibres being attached to or implicated in the cicatricial tissue referred to. Thus, the sphincter on endeavouring to contract was prevented doing so completely by its margin being, as it were, tied to two points at its circumference. The cicatricial tissue at these points, doubtless by stretching, allowed a certain amount of contraction in the sphincter, but not sufficient to admit of the fibres of the opposite sides coming firmly into contact. (See diagram.)

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[1] St. Bartholomew's Hospital.

FIG. 11.

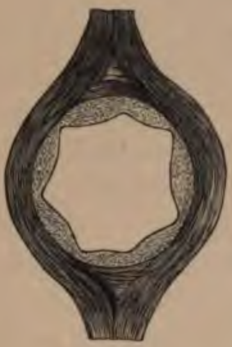


FIG. 12.

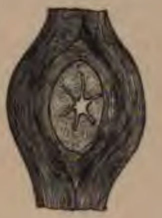
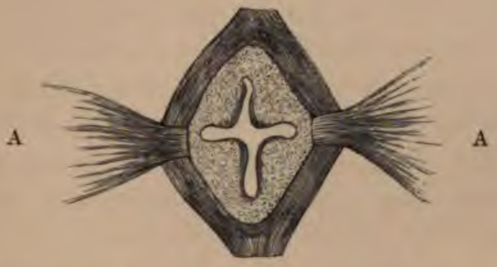


FIG. 13.



DIAGRAMS SHOWING ONE CAUSE OF INCONTINENCE AFTER DIVISION OF THE SPHINCTER.

FIG. 11.—Represents the sphincter muscle in a passive condition, as during the passage of a motion.

FIG. 12.—Sphincter contracted to prevent a motion.

FIG. 13.—Sides of the sphincter entangled in the cicatricial tissue, A A, and thus prevented from firmly contracting. (See Case 33, p. 165.)

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Occasionally the surgeon is consulted in these cases of partial incontinence as to whether anything can be done to alleviate the patient's condition. If it could be clearly observed, as in the case narrated, that the incontinence was due to the outer border of the sphincter being entangled in the cicatricial tissue, an attempt might be made to improve the condition by freeing the involved fibres by lateral incisions. Should the case be that of a woman in which the perineal aspect of the sphincter had been divided, thus destroying its anterior fixed point, I should not hesitate to operate in an exactly similar manner as would be employed for a ruptured perinæum. There is every reason to suppose that as satisfactory results might be obtained from the operation when the incontinence results from a sphincter divided by the knife, as when it has been torn asunder in the process of childbirth.

In a case (34) which I had an opportunity of observing under the care of Mr. Bruce Clarke, in which there was some incontinence after a double operation for fistula, the patient appeared to suffer from an irritable bowel passing a small quantity of stained mucoid discharge ten or twelve times a day. He was completely relieved by taking daily the following mixture, together with a suppository containing half a grain of morphia, introduced into the bowel the first thing on rising in the morning:—

Tinct. opii, ♏viij.
Tinct. card. co., ♏xx.
Mist. cretæ aromat., ℥j. Bis die.

He continued this treatment for two years, and whilst taking the medicine had no trouble at all, but on every attempt at giving up the medicine, the symptoms were at once reproduced. The amount of opium never required to be increased. So marked was its influence in this case that Mr. Clarke was able to trace an error in dispensing, owing to the medicine on one occasion being inefficient.

The discharge from the surface which freely follows for some ten days the operation for fistula should gradually decrease as the wound heals. If at this period, instead of decreasing in quantity the discharge becomes more profuse, it is suspicious that all may not be quite right, and a very careful examination should be made to see that there is no undermining at the edges or lateral burrowing to account for it. If such be found, it should be at once attended to. I have sometimes found in these circumstances one of the anal folds at the margin of the incision slightly swollen and œdematous, feeling hard to the touch. If such be the case, I always suspect there is some burrowing beneath it. It is generally of no great extent, but will increase if let alone. The undermined tag may be taken hold of by a pair of artery forceps, and boldly cut off with a pair of sharp scissors. The pain is only momentary, and the surgeon will have to use his discretion as to the administration of an anæsthetic. Another trouble which sometimes arises is that the wound, which has been quickly healing during the first two or three weeks, seems to stagnate, and the repair becomes so slow as to be scarcely cognizable from day to day. This want of repair depends much on the constitutional condition of the patient, and is seldom found in the young and healthy. I think, moreover, that the condition of the local circulation has something to do with this feeble reparative power, which is especially apt to show itself in those who from any cause have venous congestion of the part. Care should therefore be taken to prevent any accumulation of fæces causing pressure in the rectum; and the patient should be kept in the recumbent position, which materially aids the venous circulation. There is, I think, a close analogy between these slow healing wounds of the rectum and the varicose ulcers in the leg. For it is often observed that an ulcer on the leg, which has obstinately refused to heal for months, will immediately commence to cicatrize when the venous pressure is removed, the limb being kept in the horizontal position.

By acting on this view, and keeping the patient in the horizontal position, while pressure is exercised over the part by a carefully adjusted pad kept in position by a perineal bandage, I have seen rapid improvement in the healing of the wound. Benefit sometimes follows the use of local astringents, such as sulphate of zinc, two grains to the ounce, or nitrate of silver, one grain to the ounce.

The patient's general condition must, of course, not be neglected, attention being paid to the diet, while a tonic of quinine and nitro-hydrochloric acid is serviceable. If the patient has any phthisical tendency, cod-liver oil may be taken with much benefit.

Treatment by Ligature.—There are two methods of carrying out this plan, the one by the passage of a silk thread through the fistula, the other by the elastic ligature. The first is a very simple procedure. A silver probe is threaded with a piece of stout silk. It is then bent to a curve, and passed through the fistula, and drawn out at the anus. The silk thread is thus passed through the fistula so that one end hangs out at the bowel, and the other at the external fistulous opening. The ends are then loosely knotted together, and the patient allowed to go about. After a while, ranging in time from a fortnight to a month or more, the ligature comes away, having slowly cut through the included tissue. The pathological process by which this is accomplished appears to be a gradual destruction or disintegration of the included tissue, due to the ulcerative action of the thread. At any rate, the process cannot result from the strangulation of the tissue, which is not subject to the least pressure.

I have seen this plan very successful in two cases[1] under the care of Mr. Luther Holden. The relief given was at once considerable. In the one case (35) the ligature came away seven weeks after introduction, and the patient was discharged a month later with the wound quite healed. In the other case (36) the ligature came away much sooner, and the patient was discharged well six weeks after admission. In neither of these cases was the patient confined to bed.

Cases thus treated do not always run such a satisfactory course, and if the ligature, after causing considerable discomfort, fails to cut its way out, further treatment becomes necessary. If ligature be used at all, by far the most certain is the elastic one, the principle of which is to strangulate the parts by firm pressure constantly exercised upon the included tissue. This ligature cuts its way out in from three to seven days. Its action is bloodless, and after the first twelve hours causes very little pain, and would be an admirable resource if it were always to be relied upon to effect a cure. Unfortunately this is not the case, for it may happen that after the ligature has cut its way out, and the superficial parts have healed, the fistula will still remain uncured. The cause for this is to be found in the fact that the ligature has dealt with the main track only, leaving untouched one or more secondary channels and diverticula, which have started upon a course of further extension. Moreover, another objection is, that the detached or undermined margins of the skin, being necessarily left, retard or prevent the healing.

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[1] Pitcairn Ward Register, vol. vi. pp. 421, 423. (Notes by Author.)

On the grounds, therefore, of the uncertainty of its action, I only use the ligature for exceptional cases, when the nervous or physical condition of the patient renders a cutting operation inadvisable. It is especially suitable in cases of phthisis, for the patient need not be confined to bed. Elastic ligature is also valuable as an adjunct to the ordinary cutting operation if the sinus extends far up the bowel. The method of employing this ligature is as follows:—A solid cord of red india-rubber, a sixteenth of an inch in diameter, may be threaded through the eye of a silver probe, which, followed by the thread, is passed through the fistula from the external to the internal opening, and out through the anus. As the cord is passed through, to facilitate its passage it should be put on the stretch. Over the two ends of the cord is slipped a soft metallic ring; the cord is then tightly stretched, and the ring slipped up as high as possible and clamped. If the internal opening be any distance up the bowel, Allingham's instrument facilitates the passage of the ligature. This probe-pointed instrument is passed along the fistula into the bowel. A loop of the elastic ligature, guided by the forefinger, is then slipped over the end of the probe, and caught by an ingenious hook, the ligature being then drawn through the fistula from within outwards.

CHAPTER VII.

ANAL ULCER OR FISSURE.

The true anal ulcer has a peculiar interest for surgeons. The symptoms to which it gives rise are especially painful and distressing to the patient, but it is within the power of surgery to afford complete and permanent relief by the simplest operative procedure. This disease must not be confused with the extensive and intractable ulcerations to which the mucous membrane of the lower part of the bowel is liable ; nor, on the other hand, is it identical with the ragged syphilitic ulceration found at the anal margin.

It is liable to occur in those whose health is sound, and in whom no scrofulous or syphilitic taint exists ; and it therefore must be considered as a strictly local disorder.

Its origin is to be attributed to one of the small traumatic cracks or excoriations to which this part is especially liable from hard and constipated motions. In some persons the muco-cutaneous surface at the anal margin appears to be peculiarly brittle, so that it readily cracks and lacerates with undue extension. It frequently happens in such patients that, while even gently separating the anal folds in making an inspection of the part, the surgeon will see the superficial membrane give way, producing a raw surface, from which exudes a small quantity of blood. These little tears caused by the surgeon give no pain at the time, and never cause subsequent trouble. I have always found them completely healed over on examining the part twenty-four hours later. The muco-cutaneous surface at the outlet of the anus is analogous to the surface of the lips, and the same causes, whether due to dry atmospheric conditions or to some slight disturbance in the general health, render the parts dry and liable to crack from the slightest violence.

Owing to one of these cracks being deeper than usual, or from the presence of a small polypus or tag of hypertrophied mucous membrane irritating its surface, the excoriation fails to heal, and gradually assumes the character of the true anal ulcer.

When such an ulcer is thoroughly established, the symptoms are peculiar and distinctive, causing suffering out of all proportion to the extent of the lesion. If the ulcer be wholly situated on the mucous membrane, the pain is less than when situated upon the muco-cutaneous surface, for the parts forming both the outlets and inlets of the body are endowed with exquisite sensibility, doubtless to guard against the intrusion of harmful substances.

The patient complains, either immediately or within a few minutes, of passing a motion of a hot smarting pain about the rectum, radiating upwards towards the sacrum and coccyx. The pain, at first smarting, gradually assumes a dull aching character, which after a while passes completely away, only to be repeated at the next evacuation. In some instances the pain only lasts a few minutes; in others, it may be half the day before it disappears. I have known a strong and otherwise healthy man practically incapacitated for business through all the earlier part of the day from one of these ulcers, no larger than a threepenny-piece. In addition to the pain, there may be a little bleeding after the motion, and there is very commonly a slight anal discharge. It is worth while to bear in mind that these ulcers occur more frequently in women than in men, and it is by no means uncommon for the sufferer to refer the pain to the vagina or womb, and thus cases may be long treated for vaginismus, the symptoms of which are really due to an unsuspected anal ulcer; and I am sure that many cases of coxalgia owe their origin to a similar cause.

An examination will at once show whether an anal ulcer is present. It is generally found posteriorly, though I have seen it both at the sides and on the anterior surface of the anus. Its situation is often indicated by two slightly red and œdematous anal folds, which might be mistaken for external piles; but on carefully separating these with the fingers the lower border of the ulcer will be found. On first inspection it appears like a fissure, but by distending the anus and separating the folds it is commonly seen to be an anal ulcer. The character of the ulcer is not constant; sometimes it is quite superficial, while in other cases it has extended completely through the muco-cutaneous surface, exposing the subjacent muscular fibres. In chronic cases the edges are well-marked and clean cut, not unlike a soft sore. Sometimes they are undermined, so that a probe may be passed for a short distance beneath them, while occasionally a little fistulous channel will run some distance up the anus.

The ulcer is seldom larger than a threepenny-piece, while at times it is so small as only to be detected after a careful search. If the symptoms have existed any length of time, there is almost certainly some spasm of the sphincter muscle and levatores ani, so that the anus is drawn up and contracted upon any endeavour being made to expose the ulcer. I am satisfied in these circumstances if I can just get a view of even the lower part of the disease, for any attempt to pass the finger into the bowel is extremely painful.

If the subjective symptoms of fissure be clearly marked, and if there be spasmodic contraction of the anus, notwithstanding that nothing can be seen at the margin, the patient should be certainly placed under an anæsthetic, and a thorough examination made before he can be pronounced free from this disease. I regard a spasmodic contraction of the sphincter, accompanied by pain, as pathognomonic of ulceration or excoriation, and to be treated as such, even if no ulceration can be detected on examination.

Treatment.—If the disease has only existed for a short time, and if there be not much spasm of the sphincter, there is a fair prospect of cure without operative procedure.

For these cases I recommend that a soft motion should be obtained every morning for a week or ten days, so as to prevent the surface from being roughly torn open by a constipated action. In hospital practice I prescribe that two large teaspoonfuls of equal parts of confection of senna and confection of black pepper be taken the first thing on rising in the morning.

In private practice the same may be tried, but I prefer a third of a tumbler of Friedrichshalle water, to which some hot water has been added, to be taken on waking in the morning, while the parts should be carefully washed with a soft sponge after each motion. As a local application, the unguentum hydrarg. oxidi rubri is useful. The following ointment, though sometimes causing pain, in other cases is very beneficial:—Ferri subsulph. gr. x, unguentum petrolii, ℥j. Quain recommends as an ointment, hydrarg. cum cretâ, ʒss, ung. simplex, ℥j.

If these simple remedies fail to effect a cure within two or three weeks, or if the ulcer be of old standing with the muscular fibres exposed, when I believe it is useless to try them, the patient can be almost certainly cured by the following procedure:—The bowels should be cleared by a dose of castor-oil and an injection; after which, under an anæsthetic, the sphincter should be thoroughly dilated. This being accomplished, and the ulcer being well exposed by a speculum, a knife should be drawn across its surface so as to divide about a third of the fibres of the external sphincter. I am fully aware that many of these ulcers are to be cured by being touched with the actual cautery; but this is so exquisitely painful that it ought not to be done without an anæsthetic, in which circumstances I prefer the procedure described. Many surgeons state that dilatation alone is sufficient to effect a cure, and this I know to be true in many cases. But, unfortunately, it is not certain. And having on one or two occasions failed to cure cases by simple dilatation, which I subsequently successfully treated by incision, I now prefer to make the slight cut recommended in addition to the dilatation, regarding it as a certain means of cure in cases free from complication. Failures sometimes follow these attempts to cure an anal ulcer, but it will generally be found that some complication has been overlooked, such as a fistulous passage running from the ulcer beneath the mucous membrane of the bowel. The presence of such a passage might be suspected, if the discharge from the part is out of proportion to the size of the ulceration. Another complication consists of a small hypertrophied tag of membrane, or polypoid growth, situated at the base of the ulcer, which, if the operation is to be successful, requires removal.[1]

Occasionally the spasmodic condition of the sphincter in these cases simulates the symptoms of stricture (Case 37). A lady was sent to me by Dr. Muriel, of Norwich. Two years previously she had first noticed pain about the rectum on passing a motion. This gradually became worse, and at the same time she had much difficulty in passing her motions, which she ascribed not only to the pain, but to a sensation of stoppage or stricture of the part; indeed, for a year past she had never been able to have a motion without the aid of purgative medicine. The pain was sometimes experienced whilst passing a motion, but more commonly it came on a few minutes after. She thought she had lost flesh, but not markedly so. She had noticed a little blood at times, but no discharge with the motions. On examination the anus was very prominent; around the margin were four or five folds of skin, slightly pedunculated, but not œdematous. Between two of these folds was a club-shaped fissure, which could not be thoroughly exposed from the spasm of the muscles. When under an anæsthetic, a small polypoid excrescence of mucous membrane could be seen situated at the upper margin of the fissure, and this folded into the fissure when the anus contracted. There was no stricture. I removed the excrescence, and divided the sphincter, and with the exception of a slight smarting pain for a few days, she lost all her old symptoms, and returned home completely cured.

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[1] The little anal pouches, demonstrated by Horner, of Philadelphia, must also be remembered as occasional sources of irritation.

The benefit derived in these cases from the trivial operation described cannot be over-estimated. Patients who, for a year or more, have been daily in acute pain, and who have suffered severely in health as a consequence, are immediately relieved, so that on the very first motion after the operation, although the wound has not even healed, they find their once characteristic pain completely gone. The cure is generally permanent.

CHAPTER VIII.

ULCERATION OF ANUS AND RECTUM.

APART from the typical anal ulcer described in the last chapter, there are other forms of ulceration affecting both the rectum and anus. Of these ulcerations, many are due to a syphilitic or tubercular diathesis; while others result where the part is badly nourished, either from local or general causes. Syphilitic ulcerations about the anus are closely analogous with those about the mouth; they generally appear from three months to a year after infection, and are often coincident with the fading of the secondary rash. Such ulcerations are usually confined to the anal margin. The deeper and more extensive ulcerations higher up the rectum are only met with at a later period of the disease, and probably result from the breaking down of tertiary gummata.

It cannot always be ascertained by inspection whether an anal ulceration is due to syphilis; but, as a rule, there are certain local features, which, combined with the history, enable the specific to be distinguished from simple anal ulceration.

Syphilitic ulcers are often multiple; sometimes, instead of ulcers, several fissure-like cracks exist between the anal folds, while the folds themselves have a whitish, slightly sodden appearance, the whole part being moistened by a thin fetid secretion. Speaking generally, syphilitic ulcerations of the anal margins are not so painful as the simple anal ulcer, though occasionally the same wearing pain, lasting long after the passage of a motion is complained of, as in the following case (38):—

A woman, aged 30, with a syphilitic history, was under my care at St. Bartholomew's Hospital in December 1882. She complained of having had trouble about the anus for a year; worse sometimes than at others. She had only had comparatively slight pain on passing her motions until recently, when the pain had become severe, lasting for an hour or more. On examining the anus, I found the skin round it corrugated into a number of flat-topped folds. Upon separating these, the sulci between were ulcerated and bathed with a very fetid secretion. The ulceration did not extend farther into the anus than a quarter of an inch. The general appearance of the ulceration closely resembled what is so often seen at the margin of the mouth in syphilitic affections. After three weeks' anti-syphilitic treatment this patient was completely relieved of her local trouble.

These syphilitic ulcerations, though generally chronic, may be acute in their course (Case 39). I saw a patient in consultation with Dr. Walker, of Putney, who was suffering from syphilis contracted nine months previously. I first examined her on account of a slight pain and discomfort about the anus, and found a little superficial crack between the anal folds at one point. No local treatment was adopted. Ten days later I saw the patient again for two attacks of severe hæmorrhage. On each occasion at least half a pint of blood must have been lost. On examination I found that the slight ulceration previously described had developed into a deep ulcer spreading some distance into the rectum, while two other angry-looking fissures, which had not been previously present, had developed between the anal folds. In this case, on examining the urine, it was found to contain a considerable quantity of albumen, a complication which possibly accounted for the acuteness of the symptoms.

Congenital Syphilitic Disease of the Anus is a common affection in infancy; but according to my experience seldom occurs before three or four months after birth. In these cases the anus is surrounded by a dull, copper-coloured zone, half an inch or more in width. The portion of this zone near the anal margin has a coarse granular appearance, the surface being raw and bathed with a moist secretion. On separating the anal margins, some fissures may be seen extending a short distance into the bowel. The infant is fretful and generally wasted, whilst it is more than probable that there are other specific manifestations about the body.

Case 40.—A child, aged 16 months, was brought to St. Bartholomew's. The mother was undoubtedly syphilitic, having had a sore on the privates, followed by rash and sore throat.

The child's anus was not noticed to be sore until it was some months old. The child was fairly nourished, and did not show any other obvious symptoms of syphilitic disease. Upon examination the orifice of the anus was found to be situated three-quarters of an inch further back than normally, so that it opened close to the point of the coccyx. Around the anus was a raised red circular ring three-quarters of an inch wide; the diseased part was raised about a tenth of an inch above the surrounding level. Its surface was coarsely granular, like that of a mulberry, and moistened with a fetid secretion, the disease appearing to extend just within the anal margin.

I advised the following treatment:—

Night and morning the part to be gently washed with tepid water, and then after drying to be well bathed for ten minutes with lotio nigra; after which the surface was once more to be dried with a soft handkerchief, and then freely sprinkled with the following powder:—

Pulv. hydrarg. subchlor., gr. xv.
Pulv. zinci oxidi, gr. xxx.
Pulv. amyli, ʒiij.

Ten grains of blue ointment to be rubbed into the belly every night; the child's napkins to be frequently changed, and to be kept as dry as possible. In three weeks the child was perfectly well.

Tubercular Ulceration.—This may take the form of an extensive superficial ulceration, commencing at the anus and spreading upwards; but more frequently, however, it begins at several points about the rectum, resembling the follicular ulceration observed in other parts of the intestine. The disease commences in the retiform tissue between the follicular glands, slightly raised nodules, not larger than millet seeds, appearing at various points.

These, when examined microscopically, are found to consist of a collection of lymphoid cells in the retiform tissue between the follicles. After a while these cells appear to lose their vitality, either becoming caseous, or forming minute abscesses. In either case the surface gives way, leaving at first little crater-like cavities, which gradually extending both in depth and circumference form circular ulcers of some size with undermined edges. By the coalition of several of these, considerable tracts of mucous membrane become destroyed.

This follicular ulceration about the rectum, when accompanied by disease in the lungs, is regarded by most pathologists as of a tubercular nature. But there can be no doubt that a form of multiple ulceration without evidence of tubercular deposit is found in the rectum, and may be due to other causes. These ulcerations, according to Rokitansky, commence by the formation of minute abscesses, which breaking into the intestine leave ulcerations which coalesce and extend. Niemeyer describes them under the head of catarrhal ulceration, or mild catarrhal dysentery, but ventures upon no further explanation of their origin than that they may be caused by foreign bodies or retained fæces.

In the College of Surgeons Museum is a beautiful Hunterian specimen of follicular ulceration (see woodcut), in which a tubercular origin could scarcely be suspected. Hunter removed it from the body of the Earl of Bristol. The colon and rectum were ulcerated in a great number of places. Hunter states[1] that "his lordship had been long affected with the gout before his death, from which he died. He had frequent vomitings of a black fluid, which was called black bile. He had also a purging with blood; at last he had hiccup, and died."

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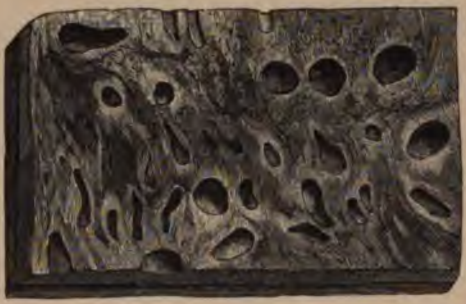
[1] Hunterian MS., Specimen No. 1199, Royal College of Surgeons.

Fig. 14.



FOLLICULAR ULCERATION OF LARGE INTESTINE.

The ulcers are numerous, round and oval, from one to three lines in diameter. The long axes of the oval ulcers are placed transversely to the axis of the intestine. Their margins are thin and regularly defined, and in several instances project over their bases. The intervening portions of the mucous membrane appear healthy.—Royal College of Surgeons, Specimen 1199.

To face page 184.

When the tubercular ulceration begins superficially in the lower part of the rectum, there are no local characteristics by which it can be at once recognized. Indeed, I believe it begins as a simple ulceration which refuses to heal, and spreads on account of the general malnutrition of the patient, and that it is not preceded by any definite tubercular deposit. It is well to remember this in order that the lungs may be carefully examined, even in cases of what appears to be simple ulceration. The following case is an example of an ulceration doubtless due to a tubercular diathesis which, however, was not suspected when the patient first came under treatment:—

Case 41.—J. G. was under my care in Darker Ward,[1] complaining of great pain in the rectum. On examination there was found some ulceration in the lower inch of the rectum with a good deal of discharge. The pain was very great, but so far as I could ascertain with my finger the ulceration appeared to be confined to the lower inch of the bowel. The patient was a tall thin man. He did not complain of any cough or chest trouble. The urine was examined and found to be normal. With a view to relieve him of his pain, and to keep the parts at rest, I divided the external sphincter in the middle line behind. The immediate relief was complete, but the wound healed very slowly, and was not entirely cicatrized when he left the hospital a month later. Moreover, there was very considerable discharge, more so, in fact, than could be accounted for from the unhealed surface of the wound, or from the ulceration, which was nearly well.

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[1] St. Bartholomew's Hospital.

The patient again applied to the hospital four months later, saying that the last month the pain had greatly increased, and that the discharge was very troublesome. He had become so weak that he could scarcely walk, and now complained of a slight cough.

Upon admission, I carefully examined the rectum, which was extremely tender. The small posterior wound was still unhealed; in fact, in an exactly similar condition to what it was at his discharge. There was also considerable superficial ulceration in the neighbourhood of the anus. At a distance of three inches up the bowel there was some further ulceration.

The discharge from the bowel was now extremely profuse, resembling red-coloured gruel; the patient's temperature was always above normal; he had night sweats, and was emaciating rapidly. There was no albumen in the water, but an examination of the lungs showed rapidly advancing phthisis on both sides.

The foregoing case shows how ulceration of the rectum may be but part of an extensive general disease, and in the same category may be included the rectal ulcerations that occasionally complicate "Bright's disease." To Dr. Dickinson[1] the credit is due of first calling attention to the connection between albuminuria and ulceration of the intestines.

Such cases commonly come under the care of the physician, and are only occasionally met with in the surgical wards. The following case, however, may be of interest on account of the diagnosis being verified by post-mortem examination:—

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[1] Croonian Lectures. 1876.

Case 42.—M. D.[1] was admitted under the care of Mr. T. Smith. He had always been healthy and regular with the bowels until three months before admission, when he noticed that he had to make haste when he wanted to pass a motion, which would otherwise escape involuntarily.

The trouble increased, so that eight or ten motions a day were passed. For two months he had no solid motion. On introducing the finger into the anus, a copious flow of ill-smelling liquid fæces occurred. At the margin of the anus there was a large fold of œdematous skin, in the centre of which was a fistulous opening, from which a jet of liquid feculent material was projected a distance of several inches when he strained. The internal opening of the fistula was about an inch within the bowel.

The mucous membrane, as far as the finger could reach, appeared to be extensively ulcerated. The discharge increased to several pints daily, and consisted of thin feculent matter mixed with a considerable amount of pus, and occasionally tinged with blood. He had no control whatever over the sphincter. The urine was loaded with albumen. The patient was transferred to a medical ward, and died in a few weeks. At the post-mortem examination both kidneys were diseased, and there was most extensive superficial ulceration of several inches of the rectum.

Apart from these extensive ulcerations occurring in phthisical patients, or those who are victims of Bright's disease, there is an occasional tendency for ulceration, once thoroughly established in the rectum, to spread upwards so as to affect not only the whole rectum, but even the colon.

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[1] Henry Ward Register, St. Bartholomew's, vol. vii. p. 137. (Notes by Author.)

When the ulceration extends higher up the bowel and into the colon, it is generally of a superficial nature. It appears as if the superficial part of the mucous membrane only had ulcerated, the submucous tissue still forming a distinct membrane over the muscular coat, so that the bowel, instead of possessing a soft velvety lining moving freely on the subjacent muscular fibres, has a surface which, though smooth, gives a hard creaky sensation to the finger, and is intimately blended with the muscular coat. This extensive superficial ulceration may gradually spread beyond the rectum to the colon. At a post-mortem examination the ulceration is found to end very abruptly. So sharp is the line of demarcation between the ulceration and normal membrane that it looks as if cut with a knife.

Case 43.—C. E., was admitted into St. Bartholomew's[1] with a stricture and ulceration of the lower part of the rectum. The symptoms had existed a couple of years, and she had been steadily getting worse, the most prominent symptoms of the case being diarrhœa and a very profuse discharge. The stricture was divided, and for a while she improved and left the hospital, but returned in a couple of months in a weak and miserable condition. The temperature ranged from 100° to 103°, and the pulse from 100 to 114. She did not suffer much pain, but the discharge of red grumous fluid steadily increased in quantity, so that in the few weeks preceding death it amounted to 15 to 20 ounces daily. She gradually grew weaker, and died after being in the hospital four or five months. There was never any return of the stricture, and up to the time of her death a full-sized bougie passed readily into the rectum. At the post-mortem examination the entire interior of the bowel from the anus to the splenic flexion of the colon, a distance of nearly two feet, was denuded of its mucous membrane. The ulcerated surface terminated very abruptly, and had a curious aspect, looking as if covered by a serous rather than a mucous membrane. This was firmly adherent to, and apparently formed part of, the circular muscular tunic. There was no evidence of tubercle in any part of the body.

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[1] Sitwell Ward Register, St. Bartholomew's, vol. viii.

On reflecting on the cause of this fatal superficial ulceration, it would seem certain from the clinical features of the case that the condition had slowly extended from below upwards, and I cannot but think that the superficial destruction of the membrane must have resulted from contact with the purulent secretion, which, either from the living leucocytes it contained or from the caustic products of its decomposition, caused progressive destruction of the mucous lining. If this hypothesis be correct, it would open an indication for treatment—viz., that of thoroughly washing out the bowel once or twice daily by copious enemata of oiled water or medicated fluid.

There is a form of ulceration which I have met with on more than one occasion in old people, and in those who suffer much from venous congestion of the part, which reminds me much of the varicose ulcer of the leg, and I am disposed to think it may be due to an analogous cause. Possibly some slight wound or excoriation occurs, which instead of healing slowly spreads, owing to the feeble nourishment of the congested mucous membrane.

I was much interested in a case (44) of this kind under the care of Mr. Marsh, who kindly asked me on two or three occasions to examine it with him. The patient was a man, aged about 60 years. He presented himself at the hospital with the history that some months previously he had had an anal fissure superficially divided, and the slight wound had not healed. When I first examined him there was an ulcer about the size of a shilling just within the anus on the posterior wall. The ulcer had completely destroyed the mucous membrane, the base being formed by the muscular fibres. The edges were clean cut and slightly undermined. There was not the slightest induration in the mucous membrane forming the margins of the ulceration, nor were there other signs of malignancy. Owing to some uncertainty as to the nature of the case, and to the ulceration refusing to heal, it was excised.

I examined sections of the removed portion under the microscope, and found no evidence of malignant deposit. The wound partially healed, and after some weeks he was discharged from the hospital at his own request. Six months later he returned to the hospital with an ulceration so extensive that it was supposed to be malignant. The ulceration extended almost completely round the bowel at the anal margin. It had exposed the muscular fibres, and the skin was undermined for a quarter of an inch, the overlapping edges being red and œdematous. The ulceration extended a couple of inches up the bowel, the mucous membrane being completely destroyed, except along the anterior wall. The ulceration had undermined the mucous membrane at the upper border of the disease in an exactly similar manner as it had the cutaneous margin, only to a greater extent, so that the finger could be passed into a kind of cul-de-sac of the depth of from half to three-quarters of an inch between the muscular and mucous coats. There was a moderate amount of discharge, consisting of fairly healthy looking pus. On examination with the finger the whole surface of the ulcer was quite soft, and the edges both within the bowel and at the anal margin were not indurated. There was no enlargement of the inguinal glands. In this case, owing to the persistent progress of the disease, it was supposed by some of my colleagues to be malignant. But the complete absence of any infiltration, either at the base or the margins of the ulcer, in my opinion negatived this hypothesis.

It must not be supposed that all cases of rectal ulceration are so severe as in the instances picked out for illustration in this chapter, for it is not uncommon to find an ovoid or circular ulcer of limited extent on the rectal mucous membrane, in which situation it may have either originated or to which it has spread; and although I regard all cases of rectal ulceration as serious, in a large number of cases the disease can be arrested and cured by appropriate treatment.

Symptoms.—Ulceration within the rectum gives rise to well-marked symptoms, many of which, however, are not peculiar to simple ulceration, for they are also present in cases of cancer or fibrous stricture; but any doubt as to the cause of the symptoms being due to stricture or cancer can be removed by digital examination or by the use of the speculum.

It might be supposed that the speculum would afford an easy means of examining the rectum, but in practice I rely, as a rule, on the finger. Owing to the mechanism of the sphincter muscle and the increased sensibility so often present in rectal disease, it is often impracticable to use the speculum efficiently without an anæsthetic. In doubtful cases, however, and after the administration of an anæsthetic, it is often of great value in forming a diagnosis. The two instruments that I have been in the habit of using are the bivalve speculum opening on a hinge, and Sims' duck-bill speculum. In using the speculum the pelvis should be raised as high as possible, which to some extent prevents the gut prolapsing from above, and thus interfering with the view.

The symptoms of ulceration when combined with stricture will be considered in the next chapter (page 217), but since I fear that local rectal ulcerations are often mistaken for dysentery and treated accordingly, it may be well to remember that such symptoms as pain, tenesmus, diarrhœa, and discharge are common to both disorders.

The degree of pain suffered is no indication of the severity of the disease, which depends rather on its situation than on its extent, for the nearer the anus, generally speaking, the greater the pain. It is not uncommon to observe that the small fissure at the anal margin may cause excruciating suffering, while a far more serious lesion higher up the bowel may be merely complained of as discomfort. There is a frequent desire to go to the closet, on which occasions, instead of the passage of a proper motion a few teaspoonfuls of discharge come away. At first the discharge may be of a mucoid character, resembling a mixture of sago and yeast. As the disease advances the discharge generally becomes darker, and is greatly increased in quantity, and at this period is often described as having a "coffee-ground" appearance. Patients not infrequently lose control over the sphincter. As the disease progresses, and as the ulceration partially heals in places, cicatricial tissue is irregularly produced, so that the bowel entirely loses its normal soft supple feel, and becomes hard and nodulated, while at the same time a certain amount of tubular stricture is produced, and it is in these circumstances that cases of ulceration so closely resemble, and may be mistaken for, cancer of the part. For further details of the symptoms and differential diagnosis, the reader is referred to the chapter on malignant disease.

Treatment.—The success of any plan of treatment depends chiefly on the amount of the ulceration, for the more extensive this has become, the more difficult it is to cure.

Syphilitic ulcerations, whilst still confined to the anal margin, are usually curable without dilatation or division of the sphincter. The part should be kept extremely clean, being washed twice a day with soft warm water, and then well bathed with lotio nigra, after which the part should be thoroughly sprinkled with the following powder :—

Pulv. hydrarg. subchlor., gr. xx.
Pulv. zinci oxidi, gr. xxx.
Pulv. amyli, ʒij.

Great care should be taken completely to wash away the old powder before the fresh is applied, otherwise more harm than good will be done. If the discharge be very fetid, 10 grains of the iodoform powder may be added to the above. If the application of powder be impracticable in the daytime, or should it fail to arrest the ulceration, the red oxide of mercury ointment diluted with equal parts of vaseline, will often prove a useful remedy. If there be any tendency to bleed, subsulphate of iron suppositories may be employed, but on account of the pain they occasionally cause I prefer not to use them, except for hæmorrhage, or when other remedies have failed.

For general treatment two grains of hydrarg. c. cretâ, three times a day, or the prescription recommended on page 236 may be tried.

If there be any indication of a tubercular origin of the disease, the appropriate constitutional treatment must be tried; and, moreover, in these cases something may be effected by change of climate and surroundings.

In some cases of ulceration it is worth while to try the effect for a time of an absolutely milk diet. Cod-liver oil is often beneficial, while the aromatic mixture of chalk, to which five or seven minims of opium have been added, given three times a day,[1] occasionally lessens the reflex irritability of the bowel. Such symptoms as flatulence may be treated with bismuth, or charcoal and turpentine.

Much can be done by the judicious local management of the ulceration. I have often wondered why, because the lesion happens to be partially concealed from view, surgeons so often lose sight of the principles which would guide them in the treatment of ulceration on an exposed surface; and why they should believe that ointments, lotions, and powders should cure an ulcer in the rectum when they fail to do so in other parts of the body.

A patient subject to much standing and with varicosity of the veins, applies to the hospital with an extensive ulcer on the leg. He may be treated by the local application of all the ointments ever invented without the ulceration showing the slightest tendency to heal; but if, instead of the ointments, we apply the principles which physiology teaches us lead to the repair of tissue, the result should be more satisfactory. The part is kept clean, pressure to support the superficial vessels is applied, and, above all, the venous congestion is removed by keeping the patient in bed with the limbs slightly raised, and the ulcer, which has resisted all treatment for months or even years, heals over in a few weeks. There can be no doubt that the main factor in the successful treatment of these ulcers of the leg is the improved circulation through the diseased part by the removal of the venous blood pressure. When a patient with varicose ulcer of the leg is in the erect position, the raw surface has a bluish congested appearance; but if the surface be again examined after the patient has been lying a short while in the horizontal position, the bright arterial appearance of the surface affords unmistakable evidence of the improved nutrition.

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[1] The following is also a useful prescription:—
℞ Liq. opii sed., ʒj.
Liq. bismuthi, ʒiij.
Tinct. catechu, ʒj.
Mist. cretæ, ad ℥vj.
Dose, two tablespoonfuls three times a day.

Bearing in mind how materially the pressure of venous blood retards repair, and that the lower part of the rectum is peculiarly liable to venous congestion, I think it most important in cases of rectal ulceration to retain the patient in a position which will lessen such pressure. To remain a short time in bed, or to maintain a sitting posture, will not suffice. The patient should be kept in the recumbent posture for as much of each day as practicable. To tilt the foot of the bed a little with blocks will raise the pelvis and relieve the pressure; or the prone position may be tried on a double-inclined plane.

Night and morning the lower bowel may be very gently washed out with an enema of warm water, to which half an ounce of boro-glyceride has been added to the pint of water. After the evening washing, if an ounce of warm thin starch, containing 20 drops of liquor opii sedativi, be injected by a soft tube well up the bowel, much relief will be afforded.

A simple unirritating ointment applied twice in the daytime by means of an ointment-introducer, appears to be beneficial, probably from its protecting the part from irritating secretions. An ointment made with 10 grains of calomel to the ounce of vaseline may be advised.

I have reason to suppose that in one case under my care the ulceration was benefited by the introduction and retention of a perfectly smooth small conical bougie. It appears to act by the pressure it produces, and is thus analogous in its action to the strapping that often proves so beneficial in ulcers of the leg.

An important question arises in rectal ulceration, as to whether any benefit is likely to result from a free division of the sphincter muscles, so as to afford rest and drainage to the part. In selected cases, there is no doubt that this is the proper plan of treatment, so that if the ulceration be situated low down in the rectum, if the sphincter muscle be strong and irritable, and if the disease has resisted simpler methods of treatment, I advise division of the sphincter. On the other hand, in an old patient with a broken constitutional condition, and in whom the sphincter muscles are almost powerless, no good is likely to follow such an operation. Indeed, as in Case 44, the new wound will probably refuse to heal, and the patient's condition be made worse rather than better. If the ulceration be extensive and the case of long standing, and if all plans of local treatment have been tried without success, the question of colotomy may be fairly entertained, and as a last resource it is certainly as justifiable for this form of disease as it is when performed for rectal cancer.

CHAPTER IX.

FIBROUS (NON-MALIGNANT) STRICTURE OF THE RECTUM.

NOTWITHSTANDING the heading of this chapter, strictures of the rectum are often of a mortal nature. Even in those cases in which the stricture is not directly fatal, yet from the persistency of the disease, and the train of symptoms following in its wake, it materially tends to shorten life.

When the disease has been neglected and allowed to advance unchecked, it is difficult to over-rate the distress and misery it causes. Day by day the patient's attention is fixed on the part by the ever-increasing difficulty of obtaining an evacuation. After a while ulceration commences and fistulæ form, the condition of the patient becoming truly pitiful, the greater part of the day being passed in vain attempts to obtain an evacuation, the constantly recurring desire only ending in the discharge of a few teaspoonfuls of grumous matter. The nights become broken and restless, the sufferer loses flesh, becoming cachectic, and even death, longed for as a relief, is often only obtained after the agonies of acute peritonitis or total obstruction of the bowel. The distressing nature of the disorder makes its study and the possibility of cure a matter of deep interest to the surgeon.

The etiology of rectal stricture is perhaps in a more confused and unsatisfactory condition than that of any other disease of equal gravity and importance. In the earlier part of this century a valuable advance was made when the distinction was first drawn between malignant (cancerous) and non-malignant (fibrous) strictures, a distinction now well recognized in surgical practice.

Malignant strictures must be regarded as mere complications of progressive cancerous disease, and will be considered in the chapter on that disorder. The present chapter is limited to the consideration of fibrous stricture, a disease not dependent upon any progressive morbid growth, but rather to be regarded as the result of some previous irritation or inflammation affecting the part.

Authors have classified these strictures in various ways. Some, founding a classification upon the cause of the disorder, describe them as syphilitic, tubercular, or traumatic, an arrangement of value when considering the various pathological conditions terminating in the narrowing of the gut. Others are content with a division on the basis of the physical characteristics of the disease, dividing them into annular and tubular strictures according to the extent of bowel involved, a classification of considerable practical value, as affecting the treatment and prognosis.

Before enumerating the various causes from which the stricture arises, it may be well to consider the actual nature of the disease itself, for however diverse may be the lesions from which it originates, all strictures have more or less certain features in common.

I have in another part of this work given a description of the anatomy of the rectum, and I will only recapitulate here the points that have special bearing on the formation of stricture. The tunics of the rectum in its lower half consist of the mucous, submucous, circular, and longitudinal muscular coats; the peritoneal membrane also forms a partial covering for the anterior wall, but only at a distance of from two to three inches from the anus.

Besides the coats properly appertaining to the rectum, the levatores ani with their fascial coverings are to be considered, as playing an important part in the mechanism of stricture. The circular muscular fibres run in a series of loops round the alimentary canal through its entire course. As the rectum is approached the bundles become coarser and stronger, till at three-quarters of an inch from the anus they are aggregated together into a strap-like ring forming the internal sphincter. Between the internal sphincter and the subcutaneous external sphincter there are only a few thin circular fibres continuous with the latter muscle. If the internal muscular coat be more carefully examined, it will be found that it by no means consists of muscular fibre only, for between the muscular bundles, and dividing them from one another, is a large quantity of white and elastic fibrous tissue which has a circular arrangement similar to that of the muscular fibres. In tracing these fibrous circles round the bowel, they are found in certain situations to be prolonged into and continuous with various structures lying external to the rectum. This is especially the case on the anterior surface, both where the bowel is connected with the prostate and at the point corresponding with the reflection of the peritoneum. Some of the fibres are continuous with the pelvic fascia, notably with the bands forming the ligaments of the bladder, and the fibrous sheaths of the levatores ani. From this arrangement of the fibrous tissue of the rectum, it will be seen that a narrowing of the canal may be effected either directly by contraction of the circular fibres, or indirectly by contractions affecting the pelvic fascia.

On page 8 I have described the results of some careful dissections of the levator ani, showing that many of the internal fibres run a course, so far as I know, hitherto overlooked by anatomists. These fibres run from the inner surface of the pubes to the sides of the coccyx, crossing the rectum at an obtuse angle about an inch and a half from the anus. Both the origin and insertion of these fibres being close to the middle line, when the muscles of opposite sides contract simultaneously, they act as constrictors of the rectum as it passes between them, and I believe that not a few cases of rectal stricture at this point are caused by the permanent atrophic shortening of the fibrous element of this muscular tissue. (See page 9, also figs. 1 and 2.)

Opportunities do not occur of examining the pathological structure of rectal stricture in an early stage, but unfortunately there is no lack of opportunity of post-mortem examinations in advanced cases. In these the alteration is always more or less of the same character, though varying considerably in degree. The change consists in a great thickening and blending together of the coats of the bowel at the site of stricture, so that they may be many times their normal thickness. On section, the cause of the thickening is observed to be partly new fibrous tissue developed between the tunics of the bowel, and partly a great thickening of the fibrous trabeculæ of the muscular coats, while the muscular fibre itself has either partially or completely disappeared, its remains being represented by the fibrous bands mentioned. The thickening does not always involve equally the whole circumference of the bowel, being generally much more marked on the anterior aspect. Nor is it always confined to the bowel itself, but extends to the tissue between the rectum and the vagina and uterus, or even to the bands of fibrous tissue forming parts of the pelvic fascia, especially those extending from the rectum at the site of the reflection of the peritoneum. The length of bowel involved in these changes varies, forming sometimes a mere "annular stricture," less than half an inch in width, and in others producing a "tubular stricture," implicating many inches of the bowel. The mucous membrane, both of the strictured part and that lying between it and the anus, is often destroyed by ulceration, though by no means universally so. When not destroyed, it occasionally presents a curious pouched condition, such, for instance, as in the following case (45), which I had an opportunity of examining with Mr. Bowlby, the specimen of which is now in the St. Bartholomew's Hospital Museum.

The stricture commenced at three inches from the anus, and extended upwards for the same distance.

The tightest portion of the stricture was at its commencement, but the whole of the three inches of the bowel involved was so contracted as scarcely to admit the finger. On section, it could be clearly seen that this contracted condition was the result of a great thickening of the rectal walls, which appeared to be from a third to half an inch in thickness, the muscular coats being chiefly involved. Instead, however, of the red muscular fibres natural to the circular and longitudinal coats being visible, these were changed into a white fibrous tissue; the course of the fibres could still be identified as running in a longitudinal direction in the outer coat, and in a circular direction in the inner. Immediately above the strictured portion was an ulceration about an inch in diameter, over which the mucous membrane was destroyed. This ulceration had extended in the centre through all the coats into the peritoneal cavity, and no doubt was the channel through which the fatal extravasation had occurred. Except in one or two spots, the mucous membrane was still intact throughout the strictured portion, but it presented a remarkable appearance.

In four or five places the mucous membrane had been forced between the hypertrophied muscular bands, so as to form hernial-like protrusions extending completely through the muscular coats. These protrusions formed little sacs, varying in size from a pea to a small nut, the entrance into them as they passed between the muscular bands being drawn into a ring-like constriction. In two or three places the mucous membrane thus protruded had evidently formed adhesions to the circum-rectal connective tissue, for it had been torn open on removal of the bowel at the post-mortem. There was some slight ulceration of the mucous membrane below the stricture.

In some cases of narrow annular stricture the contraction appears to be confined to the mucous and internal circular muscular coats only, taking the form of a permanent reduplication of a fold of mucous membrane.

Cause of Fibrous Stricture.—There are two pathological conditions in which I believe these fibrous strictures to originate.

1. The tendency of fibrous tissue, subjected to chronic inflammation, to become both hypertrophied and contracted.

2. The tendency of muscular fibre, when subject to undue and persistent nerve irritation, to undergo fibroid degeneration, with permanent atrophic contraction of its fibrous element.

The result is, in my opinion, more commonly due to the first than the second of these conditions.

Chronic Inflammation.—This leads to the production of new fibrous tissue, which, together with the old fibrous framework of the inflamed part, has a subsequent tendency to contraction. Remembering the circular arrangement of the fibrous tissue of the bowel, it can be readily understood how an inflammation affecting even a limited area of its circumference may, by drawing the circular fibres like a knot towards one point, produce a stricture of the canal; and further, it can be seen how inflammations even external to the bowel, such as pelvic cellulitis, may occasionally produce a similar result from the continuity of some of the rectal fibres with the pelvic fascia.

Muscular Spasm.—How far this may or may not be the originating cause of fibrous stricture has been much discussed.

Molière,[1] Trélat, and Deleur all deny the existence of spasmodic stricture, while Leichtenstern[2] "considers the existence of such an affection no longer calls for serious discussion."

In the American Journal of the Medical Sciences, for October 1879, is an admirable article by Van Buren on this subject. The views of this author, from his scientific culture and large practical experience, deserve great respect. After carefully analysing the views of various writers, he expresses his opinion that, "neither in imaginary nor in actual stricture of the rectum is muscular spasm an element of any practical importance."

One of the chief arguments used by Van Buren and other writers in favour of this view, is the physiological impossibility of the permanent spasm of involuntary muscular fibre.

Of course I entirely agree that permanent muscular spasm, in the sense that a muscle is perpetually in vital action, is an impossibility. Nevertheless, there is a condition of temporary, followed by permanent, shortening to which muscles frequently stimulated by reflex irritation are liable. Illustrations of this phenomenon may be often observed in joint disease. Take, for instance, a case of untreated chronic disease of the knee-joint, where it will often be found that the hamstring muscles have dislocated the tibia from the femur, drawing it backwards and upwards. At first, from the startings of the limb and other evidence, it would appear that the intermittent contraction of the muscles is a pure reflex action, resulting from irritation of the sensory nerves of the joint. But after a while the muscles undoubtedly undergo a permanent shortening by atrophy of their muscular fibre, and by contraction of the remaining fibrous tissue element. When this stage has been reached, the contraction ceases to be in any true sense a muscular action, so that, even after all source of irritation has been removed, the shortening remains as permanent as ever.

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[1] Maladies du Rectum et de l'Anus, p. 273, 1877.

[2] Constrictions, Occlusions, and Displacements of the Intestines: Ziemssen's Cyc., vol. vii. p. 484. New York, 1876.

If we observe one of these cases from the commencement, it will be found that the least movement or irritation of the diseased joint is sufficient to throw the muscles into spasmodic action; but after a while this morbid excitability gradually diminishes, giving place to permanent atrophic contraction.

Arguing from analogy, it would seem not unlikely that any constant source of irritation, such as would arise from a long-continued ulceration, might induce a similar reflex contraction in any of the muscular canals, and that such irritation, if continued, might terminate in a permanent shortening of their fibrous elements, thus producing an annular stricture. This reflex contraction of the involuntary muscular coat of a canal is occasionally illustrated in the œsophagus, where cases have been recorded in which, owing to an ulcer of the mucous lining, the affected portion of the œsophagus has been immediately thrown into contraction by the irritation of the ulcerated surface from the passage of food or a bougie. But it is not by analogy alone that I venture to assert that muscular irritability must be reckoned as among the causes of rectal stricture, nor do I believe that such exists without any other lesion; but that muscular irritability causes an otherwise slight narrowing to assume the characteristics of a tight stricture, I can positively affirm; and further, I have known such a stricture in time acquire a permanent character. I well recollect a case (46) at the Royal Free Hospital transferred to my care by my colleague, Dr. Allen Sturge. It was one of rectal ulceration with some tendency to stricture. I was puzzled about the case, for upon the first examination I found ulceration in the posterior part of the bowel, with an annular stricture situated two inches from the anus, which would barely admit the tip of the finger. The examination was extremely painful. Upon examining the same patient a few days later under an anæsthetic, the ulceration was present as before; but to my surprise there was scarcely any stricture, for the finger would pass readily into the bowel with only a sense of being slightly gripped at the spot which previously would not admit the finger-tip. I had this patient under observation for some time, and soon learnt that by introducing the finger somewhat roughly into the bowel the sense of stricture was immediately produced, but by keeping the finger gently in contact with the strictured part a feeling of gradual giving way was experienced, so that the finger would lie comparatively easily in the narrow part where, upon any rough movement, it could be felt to be palpably and immediately grasped, again relaxing in a few seconds. At the time of these observations I did not understand the action of the levatores ani, but I now believe that their contraction was the chief element in producing the sensation of stricture. By rest and local applications the ulceration greatly improved, and with this improvement the stricture in great measure vanished, and the woman left the hospital in a fairly satisfactory condition, and returned, as I feared, to the great unknown land to which hospital patients vanish.

Two years afterwards my friend, Dr. Lediard, of Carlisle, then Resident Medical Officer at Clevedon Street Asylum, told me that he had an old rectal case of mine under his care, and kindly asked me to see it with him. On doing so I at once recognized my patient with the semi-phantom stricture; but here the identity ceased, for on examining the part I found a great change, and in the place of the yielding and comparatively soft stricture which I had encountered two years previously, there existed a firm, hard, totally unyielding fibrous contraction, narrowing the bowel to the smallest circumference. The patient herself was emaciated and careworn, and for some weeks had a temperature ranging from 100° to 102°. There was a profuse discharge from the anus, the parts around which were red and swollen. I assisted Dr. Lediard to perform colotomy, from which the patient made a satisfactory recovery.

The case referred to on page 233 is also another instance in which I am sure muscular contraction played a considerable part in the production of the stricture. In both these cases I believe the constriction experienced by the finger was due partly to the fibres of the levatores ani, already described, and partly to the circular muscular fibres normal to the bowel. While I am convinced that strictures exist which may be described as partially spasmodic, I regard them as rare; or perhaps it would be more accurate to state that at the time when the cases come under observation the spasmodic condition has passed away, leaving an atrophic shortening of the muscular fibres of a more or less permanent nature.

Of 70 cases of rectal stricture recently admitted into St. Bartholomew's Hospital, the following Table gives the probable primary cause of the disorder:—

Syphilis	13	Internal fistulæ	2
Childbirth	8	Dysentery	2
Operation for piles	8	Tubercular disease	1
Operation for fistula	2	Unassigned	30
Congenital	2		—
Inflammation of the bowels, peritonitis (?)	2		70 —

Of these, 63 occurred in women, 7 only in men.

This Table is made partly from my own notes when Surgical Registrar at St. Bartholomew's Hospital, partly from the notes of my fellow-registrars, Mr. Macready and Mr. Butlin.

Stricture due to Syphilis.—It would appear in the above Table that 18 per cent. represents as near as possible the proportion of cases of stricture admitted into St. Bartholomew's Hospital which can be fairly assigned to a syphilitic origin.

Many authors assign a much larger number of cases of rectal stricture to syphilis, and it is somewhat remarkable to observe the habit of attributing stricture to syphilis without duly considering the evidence of that disorder. In the registration volumes at St. Bartholomew's, the heading of the case is copied from the patient's board, on which it is entered by the surgeon, while the history of the case is obtained independently by the Surgical Registrar. In these volumes several cases are entered as "syphilitic stricture;" yet in the notes of the cases it may be specially mentioned that there is "no history of syphilis, either local or constitutional." With the foregone conclusion that fibrous stricture is probably due to syphilis, that disorder is often assumed upon what I consider very insufficient evidence. Nevertheless, of any single cause syphilis holds the highest place, but yet we have to account for why this diathesis should so much more frequently lead to stricture in women than in men, for an infinitely larger number of males suffer from syphilis than females, about the proportion of ten to one, a proportion exactly reversed in the frequency of stricture. The true explanation of the preponderance of the disease in females, whether started from specific causes or otherwise, is to be sought rather in the anatomical relations of the rectum than in any constitutional diathesis.

Displacements of the uterus, contractions of the pelvic fascia, and injuries to the recto-vaginal septum, owing to their connection with the fibrous tissue of the rectum, affections to which women alone are liable, often play a part in the production of stricture. Moreover, ulcerations of the rectum of all kinds are far more frequent in women than in men, and such ulcerations are frequently the starting-point of stricture. Different authors hold varying views as to how syphilitic disease leads to stricture; some, among the most prominent of whom is Gosling,[1] regard rectal stricture as the result of the healing of chancroidal ulceration which has extended upwards from the anus. Van Buren also recognizes this as one cause of stricture, believing that this ulceration generally starts from the inoculation of cracks and fissures about the anus.

A difficulty in assenting to this view has been the fact that chancroidal ulcerations are commonly situated at the anal margin, while strictures are generally found from an inch and a half to two inches up the bowel. Kelsey[2] and Fournier[3] regard the strictures in these syphilitic cases as the result of a true tertiary inflammation or ulceration of the part, the rectal walls being infiltrated with syphilitic neoplasm, which, either by breaking down in ulceration or by becoming organized into contractile tissue, produces the stricture.

That strictures may be produced in this way by the ulceration of tertiary deposits, I have little doubt, for one is very familiar with the hard puckered condition left by the healing of ulcers about the tongue and fauces of old syphilides; such a condition, if affecting the walls of a hollow canal like the rectum, would certainly lead to contraction of its calibre. I believe that both chancroidal ulcerations of the anus, and simple anal ulceration may occasionally lead to stricture; but I do not agree with Gosling and Van Buren that it does so by the contraction of the cicatrix of the healed ulcer.* Indeed, I rather regard the stricture as due to the permanent atrophy of the circular muscular fibres of the bowel, and the posterior border of the levator ani, an atrophy brought about by the prolonged reflex irritation excited by the ulcerated surface. (See page 206.)

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[1] Archives générales de Médecin, tom. iv. p. 667.

[2] Diseases of the Rectum, p. 172.

[3] Lésions tertiaires de l'Anus et du Rectum. Paris, 1875.

If this be the true explanation, it will account for the contracted part of the gut being not necessarily over the immediate site of the ulceration.

Stricture due to Fistula.—Fistula is most commonly the result of stricture, though occasionally this relationship may be reversed, as the following case shows.

Case 47.—A woman was admitted into St. Bartholomew's Hospital with fracture of the tibia and fibula, who, with the exception of piles, had never suffered from any rectal trouble. A fortnight after admission she was seized with great pains in the lower part of the belly, followed by the formation of abscess. She was in the hospital for twelve weeks, and when she left had several discharging sinuses about the anus. Since that time she had a gradually increasing difficulty in passing the motions, and was again admitted into the hospital eighteen months later, when she was found to be suffering from a well-marked stricture.

It is a matter of some surprise that the irritation of a fistula should so seldom be followed by stricture, and I think it will probably be found that it is only when the fistula extends some distance up between the coats of the bowel, with a tendency to abscess formation, that the irritation is sufficient to cause stricture. The permanent thickening thus caused by a fistula reminds one very much of the ill-defined hard thickening about the groin in patients who have suffered any length of time from fistulous openings in the groin following a bubo. The thickened condition of the groin in such patients often lasts several years.

Stricture following the Operation for Piles.—This is occasionally a cause of stricture which may result from the operation being improperly performed, either the skin of the anal margin being too freely removed, or the submucous and muscular coat being destroyed: mucous membrane may be removed very freely without fear of stricture, but not so the submucous or cutaneous tissues. Moreover, a stricture may follow indirectly owing to ulceration extending from the wound made in the pile operation; but this would scarcely occur in a healthy person. The stricture following the operation for piles is generally, though not necessarily, situated close to the anus. (See page 114.)

Childbirth.—A considerable percentage of stricture cases can be traced to child-bearing. In some of these the cause appears to have been a lingering labour with sloughing or other damage of the posterior vaginal walls, but the majority apparently result from pelvic cellulitis. The intimate connection of the fibrous tissue of the bowel with portions of the pelvic fascia, explains how its contraction from inflammation may secondarily involve the rectum.

Pelvic cellulitis is generally dealt with in works on diseases of women, but owing to the effect at times produced on the rectum, it cannot be passed over here without some consideration. Pelvic cellulitis is usually a sequence to delivery or miscarriage, though not necessarily so; but I will not stop to consider the pathological conditions from which it arises, for it is merely the effect produced which bears on the present question. A greater proportion of these inflammations pass on to the formation of abscess, though a certain number of them terminate in resolution without any obvious pus formation. Speaking generally, the more rapid and acute the local inflammation the less permanent are its results, and it is rather from the effects of chronic inflammation that permanent thickening and induration of the tissues result. Pelvic cellulitis commences as an acute disorder, but it is apt to degenerate into a subacute or chronic form. This is due to the anatomical situation in which the matter is formed, a situation in which the pus may take weeks or months in coming to the surface, and then only discharging itself through an imperfectly formed opening, so that from insufficient drainage the irritation is further prolonged. The permanent troubles that follow these abscesses depend rather on the result of the changes they induce in the surrounding tissue than on any subsequent contraction of their own cavities. The changes in the neighbouring tissue take the form of sclerosis and permanent contraction, and tissues which in health admit of movement independent of each other, become blended into fibrous masses. Fortunately, it is rare for the rectum to become directly implicated in this disease, the uterus, ovaries, and vagina being more commonly affected. The following case (48), narrated by Dr. Duncan,[1] well illustrates the effect of pelvic cellulitis as shown by post-mortem examination :—

A young woman died fourteen months after recovery from pelvic cellulitis. When she left the hospital at the time of her recovery there appeared to be no other morbid condition than a thickening on the left side of the uterus, by which it was almost completely fixed to the pelvis. The appearance found after death explained this thickening, and accounted for the immovability of the womb. For the folds of the broad ligament, from the upper part of the vagina to the lower surface of the ligamentum ovarii, enclosed a mass of dense cellular tissue of almost cartilaginous hardness, dense white bands intersecting each other in all directions.

Pelvic cellulitis does not always give rise to very definite symptoms, for at times its course is insidious, and this is especially the case when not directly connected with the puerperal condition. Extensive mischief may have been done, but yet no definite history can be obtained from the patient as to how the trouble commenced, beyond the fact of some febrile symptoms, pains about the bowel, or abdominal tenderness.

West mentions the following case which illustrates this point, and shows at the same time how the rectum may be implicated. (Case 49.) A young woman had constipation from the fourth to the eighteenth day after her first confinement, which was

[1] West and Duncan: Diseases of Women.

followed by inflammation of the pelvic tissue behind the rectum. The action of her bowels was from this time attended by great pain and costiveness, alternating with diarrhœa, the evacuations being not infrequently mixed with pus. In spite of these symptoms, however, she gradually regained her general health and menstruation returned, though not regularly. Seventeen months after her confinement she had been visiting the Crystal Palace in Hyde Park, and while returning home in an omnibus the jolting of the vehicle occasioned the sudden bursting of an abscess, and the discharge per anum of about three pints of matter streaked with blood. For the next three months a more or less purulent discharge took place from the bowel, behind which the abscess from whence it proceeded was situated, forming there a tumour about the size of a small apple. The discharge gradually ceased with the ultimate complete disappearance of the tumour, of which six years afterwards no trace existed. In the case just narrated there does not appear to have been any permanent stricture of the rectum.

To avoid confusion, it must be borne in mind that pelvic inflammation and abscess are more often the result of stricture of the rectum than they are the cause from which the contraction originates. Such secondary abscesses are described, on page 251, as one of the means by which a rectal stricture ultimately proves fatal.

Symptoms of Rectal Stricture.—The symptoms of rectal stricture vary widely in different cases, a variation to be expected when the different degrees and stages of the disorder are considered. Occasionally the amount of contraction is so slight as to cause but little trouble, or it may be so tight as to lead to complete occlusion. Again, such complications as ulceration, inflammation, and fistula will materially alter the character of the disorder. It must be remembered, too, that the disease is chronic with a gradual tendency to get worse, so that symptoms become prominent at the later stage which were wholly absent at the beginning.

Stricture frequently following upon ulceration will often be preceded by all the signs of the latter disease which have been discussed in the previous chapter, so that the present description will apply rather to the cases in which prior ulceration has been absent. Owing to the insidious manner in which the contraction commences, it has often made considerable progress before the attention of the patient is markedly attracted to the part. Some difficulty in passing the motions may be the earliest noticeable symptom, and this is generally ascribed by the patient to constipation, requiring more than ordinary straining to get rid of a motion. The difficulty slowly but surely increases, and relief is sought from the use of purgative medicine. It may be noticed at this time that the motions are smaller than natural, being often described as resembling pipe-stems, or passed in small shapeless fragments, while occasionally they are flat and ribbon-like. It must be remembered that this narrowing of the motions is not necessarily due to a stricture, for an irritable sphincter may produce a similar result. On the other hand, cases are occasionally met with in which there may be considerable narrowing of the bowel, though the patient has not observed any special smallness of the motions.

There is a feeling after going to the closet as if the bowels had not been completely relieved, and women especially complain of a certain amount of "bearing-down pain." As the disease advances, and probably coincident with some ulceration of the part, its character alters, all the symptoms increasing in severity. Diarrhœa alternates with constipation, the former becoming perhaps the more prominent symptom of the two. The diarrhœa is of a very teasing character, requiring the patient to visit the closet a dozen times a day or more. On these occasions they pass perhaps only a little solid material, with some teaspoonfuls of a yeasty-looking discharge. In more advanced cases the discharge is of a darker colour, somewhat resembling coffee-grounds. The desire for a motion seems quickly to follow taking anything to eat or drink, one of my patients describing his sensations as if "everything he took separated at once into fluids and solids, the former passing out quickly, while the latter appeared to be passed with difficulty." Wind is often a source of great trouble, and this the patient dare not pass except at stool, for the effort to do so is followed by a liquid discharge. At this time abscesses form in the neighbourhood of the stricture, resulting in the formation of fistulæ. In women it is not uncommon for a recto-vaginal fistula to form, so that fæces are passed by the vagina, as in Case 56.

The anus becomes excoriated and inflamed by the discharges, and around its margin may be seen œdematous folds of skin having a pink shiny appearance. Albumen is often found in the urine.

When affairs get to this condition, the state of the patient is very distressing, much of the day being passed in ineffectual attempts to procure an evacuation, while the discharge, over which they have lost all control, is nearly constant. If unrelieved, there is an increasing tendency towards death, the patient becomes hectic and emaciated, and the scene not infrequently closes with an acute attack of peritonitis or intestinal obstruction.

The foregoing is a brief sketch of the progress of a bad case of rectal stricture, the symptoms being mentioned in the sequence in which they generally occur; but it must be borne in mind that many of these symptoms are common to other diseases of the bowel besides stricture, nevertheless collectively they afford almost certain evidence of its presence. If the stricture be in the lower four inches of the bowel, the diagnosis can be established by digital examination. On passing the finger into the bowel, there is often a marked absence of contractile power in the sphincter. This, however, is more commonly met with in advanced cases, or those in which there is much ulceration. The bowel below the stricture is seldom normal, and instead of feeling soft and velvety, a harsh creaking sensation is conveyed to the finger, more like that of a serous covering. The mucous membrane may be irregular and adherent to the subjacent tissue, sacculated in some places and nodulated in others.

The actual strictured portion may commence abruptly, the finger-tip passing into a narrow orifice in the centre of a kind of diaphragm, or the contraction may be more gradual, as if the finger was passing towards the apex of a cone. With very gentle pressure, if the stricture be annular, the finger may pass through it, which then feels like a tight ring encircling the bowel, the canal beyond being dilated. As a rule, on the first examination it will not be possible to pass more than the tip of the finger into the stricture.

And let me here earnestly caution practitioners against the temptation to force the finger through the stricture to ascertain its extent. There is great temptation to do so from the sensation of the stricture gradually yielding. If this temptation be given way to, sooner or later a disaster will inevitably occur, with the most distressing consequences (see page 228).

No doubt, when the question of prognosis and treatment arises, it is of great importance to ascertain the extent of bowel involved, and to know whether the stricture be annular or tubular. When the contraction is too tight to admit the finger, at the first examination, it will generally be found, after a few days' rest in bed and the careful employment of a small conical bougie, that it will dilate sufficiently for digital exploration. If this is still impracticable, I have found the use of an olivary-headed sound of great value in estimating the length of the stricture (see 15). The acorn-shaped head is passed through the stricture, and on withdrawal can be felt to catch against the upper boundary of the contraction, thus allowing a fair estimate to be obtained of its length.

Apart from the error of mistaking the symptoms of fibrous stricture for those of ulceration, dysentery, piles, and other slight ailments, which can be cleared up by careful examination, the real difficulty is in distinguishing between fibrous and malignant stricture, the differential diagnosis between which will be discussed hereafter.

Diagnosis of Stricture above the reach of the Finger.—Easy and sure as is the recognition of stricture in the lower half of the rectum, the diagnosis becomes difficult and uncertain when the disease is higher up the bowel. On reference to works on rectal surgery in the early part of this century, one is astonished at the amount of strictures which were detected and treated far up the bowel. The following extract from Salmon's[1] work fairly represents the views amongst specialists at that period:—"Respecting the situation of stricture, I have been surprised at patients informing me that they have been examined by surgeons of considerable celebrity, and declared to be perfectly free from stricture, simply after an examination made with the finger, or with the bougie of only four or five inches in length, and that even when the most decided symptoms of the disease were present. Doubtless there are many cases where the obstruction is sufficiently near the orifice to permit of its detection by such means, but in by far the greater number the stricture is situated too high in the intestine to allow of discovery by so limited a mode of examination."

Molière, in his valuable and amusing work,[2] states "that at one time there flourished a class of practitioners in London who as readily detected a rectal stricture as another class now discover polypoid growths in the larynx, one of these gentlemen having carried his ingenuity so far as to have invented a special form of pantaloons for his patients, in order to facilitate the passage of a bougie." To Brodie and Syme belong the credit of proving the fallacy of Salmon's views, indeed the former, after sixty years' observation, could only remember two instances of fibrous stricture high up the bowel, but, he adds, "the number of people he had known treated for this imaginary disease was simply astonishing."

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[1] Stricture of the Rectum, by F. Salmon, 4th edition, 1833.

[2] Molière, op. cit.

Without discussing the motives which induce some so readily to discover these strictures, undoubtedly a considerable proportion of cases were treated by honest practitioners, in the firm belief that they were dealing with a genuine disorder.

Syme[1] narrates the following case (50):—"I saw an elderly lady with Dr. Begbie. She had been supposed to suffer from stricture of the rectum between five and six inches up the gut, and had been subjected to treatment for it for several years before coming under Dr. Begbie's care, by two gentlemen of the highest respectability in this city. Finding the coats of the rectum, though greatly dilated, were quite smooth and apparently sound in their texture, so far as the finger could reach, and conceiving that the symptoms of the case denoted a want of tone or proper action, rather than mechanical obstruction of the bowels, I expressed a decided opinion that there was no stricture in existence. Not many months afterwards the patient died, and when the body was opened not the slightest trace of contraction could be discovered in the rectum, or any other part of the intestinal canal. One of the gentlemen who had been formerly in attendance was present at this examination, and wishing to know what had occasioned the deception—which, he said, had led to more than three hundred hours being spent by himself and his colleague in endeavours to dilate the supposed stricture with bougies—he introduced one as he had been wont to do, and found that, upon arriving at the depth it used to reach, its point rested on the promontory of the sacrum."

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[1] Diseases of the Rectum, 3rd edition, 1854.

I entirely agree with Brodie, Syme, Kelsey, Van Buren, and others as to the rare occurrence of stricture in the upper part of the rectum. Of course I am only referring to fibrous stricture, for it is well known that the sigmoid flexure is not an uncommon site for malignant disease. Of the seventy cases mentioned in the St. Bartholomew's Hospital Table, only three were situated higher than four inches from the anus. In one of these the stricture was only just beyond reach of my finger, and my colleague, Mr. Langton, was able to touch it when the patient was under chloroform. At the post-mortem examination it was found to be situated four and half inches from the anus. In the second case I performed the autopsy,[1] and found the stricture just below the promontory of the sacrum, while in the third case[2] the stricture was at the sigmoid flexure. The very fact of the comparative rareness of strictures beyond reach of the finger ought to make us careful not to overlook the possibility of their existence.

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[1] Henry Ward Register, vol. viii. p. 175. (Notes by Author.)

[2] Abernethy Ward Register, vol. i. p. 21. (Notes by H. Marsh.)

The symptoms already described as occurring in stricture of the lower part of the rectum, are in some measure present when the disease is situated higher up, but until complete obstruction occurs they are perhaps less severe and clearly marked. The constant desire to defecate is not so prominent, neither is the same amount of pain and discomfort noticeable. This is what might be expected when the different functions and nerve supply of the upper and lower part of the rectum are considered. The lower part is more sensitive, and even in health intolerant of the pressure of fæces which at once evoke the desire to defecate, while the descending colon and upper part of the rectum are comparatively tolerant of fæcal collections.

In cases of high obstruction the symptoms may consist of obstinate constipation, alternating with diarrhœa, while colicky griping pains are of frequent occurrence. Occasionally even these symptoms may be absent, or not sufficiently marked to cause the patient to seek advice, the first indication of danger being the sudden onset of complete obstruction. The cause of this is explained by the accidental blocking up of a previously narrowed gut, as was the case in the following instance in which I performed the post-mortem.

Case 51.—C. B.,[1] without having had previously any marked symptoms, was suddenly seized with obstruction of the large intestine. Colotomy was performed, but the patient died on the fifth day. The following were my notes of the post-mortem. The whole of the peritoneum showed signs of recent acute peritonitis, being everywhere matted together with large masses of yellow lymph. There was a small amount of fæcal extravasation in the neighbourhood of the colotomy wound, but owing to the state of the parts its source could not be easily ascertained. On tracing the descending colon downwards, it was much dilated. At a distance of five inches from the anus was an annular stricture not more than three-fourths of an inch in length, which would only admit a No. 12 catheter. The opening was completely blocked by a small oval piece of fæces of extreme hardness. In the Hospital Museum[1] (specimen 2017) is a very similar case, interesting not only as regards the cause of complete obstruction, but for the remarkable length of time the patient lived after the obstruction became complete:—"The patient was a lady, 30 years old. She had been for three years subject to occasional attacks of obstinate constipation, which were generally followed by diarrhœa. Four months before her death the obstruction of the intestine became complete, and after this time she had no fæcal evacuation. Death was eventually caused by the bursting of the intestine, which was enormously distended. The cause of the obstruction was found to be a cherry-stone which had lodged above a stricture in the descending colon, and had completely closed the canal."

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[1] Henry Ward Register, vol. viii. p. 175. (Notes by Author.)

If subjective symptoms be present, the bougie may be of value in confirming the diagnosis, although I believe, from its use alone, it would be rash to assume the existence of a stricture. The bougie best adapted for an examination is No. 6, which should be made hollow with a small pipe at its base, so that water may be injected through it at the time of examination. In passing a bougie it is very common to find an obstruction at five or six inches from the orifice. This is either due to the bend of the sacrum, or to the bougie catching in one of the loose folds, but by a little very gentle manipulation the obstruction may be overcome. If caused by a fold of the mucous membrane, by injecting water through the hollow bougie the bowel will be distended and the fold obliterated. I have by this means on one or two occasions passed the bougie far up the bowel, when, prior to the injection of the water, it would only enter a few inches.

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[1] St. Bartholomew's Hospital.

In the passage of the long bougie no force should on any account be used, for the bowel can be perforated with the greatest ease. In a case (52)[1] at St. Bartholomew's Hospital, in which an injection was given by the long tube prior to an operation on the perinæum, the patient immediately after the injection became collapsed, and died of acute peritonitis, and it was found that the bowel had been perforated by the enema tube, and the whole of the soap and water thrown into the peritoneal cavity. Many similar cases have been recorded.

The question is sometimes raised as to whether in obscure cases of obstruction the whole hand might not be introduced within the bowel with a view to thorough examination. In eight consecutive cases, in the post-mortem room, I endeavoured to practise this manœuvre. In two I failed to get within the anus. In two of the remaining the rectum was extensively lacerated; in one the rent extended into the peritoneal cavity. In the remaining cases I was enabled by perseverance to get my hand as far as the sigmoid flexure, but the fingers were so tightly grasped that I doubt very much whether I could have made a diagnosis in the living body. My own hand is moderately small for a man (7½), but from my experience on the dead body I feel that it would be an extremely hazardous proceeding to attempt to pass my hand into the living body. Of course, if the surgeon should have an exceptionally small hand and wrist, it might be introduced with comparatively little risk, and I have seen my colleague, Mr. Walsham, with these physical advantages make an examination by this means. Nevertheless, I cannot but regard the procedure with an ordinary-sized hand as one of considerable danger, not to be counterbalanced by any advantages obtained.

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[1] St. Barth. Hosp. Reports, Appendix, p. 88, 1883.

Treatment.—Stricture of the rectum presents the greatest difficulty in treatment, many careful and experienced authorities[1] having doubts whether the disease is curable at all in the strict sense of the word. According to my view, whether stricture be curable or not depends entirely upon its nature; for while many of the annular strictures are perfectly curable, some of the tubular strictures are beyond the hope of local remedy. I shall consider the methods of treatment in the following order:—1. Gradual dilatation. 2. Internal division of the stricture. 3. Complete section of the stricture, with division of external parts. 4. Colotomy.

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[1] Van Buren; Molière.

Besides these methods, forcible dilatation, excision of the stricture, or even of the lower part of the bowel, have been practised. As regards excision of the strictured part, the results hitherto have not been satisfactory, the cicatricial tissue resulting from the operation having as great a tendency to contract as the original disease, while removal of the lower part of the bowel is unnecessarily severe. It can only be applicable to strictures of the lower portion of the rectum, and these are just the cases most amenable to other forms of treatment.

Forcible dilatation, if the stricture be situated anywhere except at the anal margin, is such a hazardous and dangerous proceeding as to be quite unjustifiable, and when it be remembered that many cases of sudden death from rupture into the peritoneal cavity have resulted from merely forcing a finger through the stricture, the peril of dilatation by the forcible stretching of the part with the bivalve instrument can be easily conceived. The bowel will give way at its weakest part, which is not infrequently at the cul-de-sac of the peritoneum. The following case (53) will show the extreme ease with which a rent may be made, even by a comparatively gentle digital examination:—

A patient was admitted into St. Bartholomew's Hospital with stricture of the rectum at 2½ inches from the orifice. She was placed under chloroform, and examined in the lithotomy position for the purpose of diagnosis. On the finger of the surgeon being introduced, the tip just entered the stricture, which, on gentle pressure, yielded slightly. On passing the finger a little further still, without using any force, the stricture suddenly split, the finger apparently passing into the peritoneal cavity. Further examination was at once desisted from, and the patient put back to bed and ordered opium. Within a couple of hours the patient was suffering intense abdominal pain, and by that night the belly was distended and the knees drawn up. The following day the face was pinched and hollow, the pulse hard and rapid, and after a day of intense suffering she became collapsed, and died within thirty-six hours of the examination. At the post-mortem, a stricture on the level of the peritoneum was found, the upper wall of which, from ulceration, was little thicker than blotting-paper. In the centre of the thin portion was a ragged rent, extending into the peritoneal cavity, which contained a considerable quantity of liquid fæces.

Such a case is sad beyond expression, for the mere attempt to ascertain what might be beneficial to the poor creature was followed by a sudden and violent death.

I was present at the examination in question, observed the patient carefully afterwards, and performed the post-mortem. I need not say that this accident strongly impressed me with the extreme care required in examining a patient with rectal stricture; and, at the risk of repetition, I would urge upon students and practitioners that, however great the temptation may be to push the finger forcibly through the stricture to ascertain the limits of the disease, it should be resisted as a proceeding fraught with danger; moreover it is unnecessary, for a tight stricture that will not admit the finger-tip can be safely stretched by gradual dilatation, at least sufficiently for diagnostic purposes.

Treatment by Gradual Dilatation.—In a considerable number of cases great relief may be obtained by the gradual dilatation of the stricture by bougies, and occasionally a cure may be effected. The success following this method is in part dependent on the nature of the stricture, and in part on the regularity and perseverance with which the treatment is carried out.

I am in the habit of fully explaining the great length of time and sacrifice necessary for the relief of this disease. Otherwise, patients are apt to become dissatisfied unless a speedy cure be effected, and will relinquish the treatment without sufficient trial; for it will often require months, rather than days or weeks, to effect any permanent improvement.

During a long course of treatment, it is not by any means necessary that the surgeon himself should always pass the bougie, for when the stricture is within two or three inches of the anus, the short conical bougies, described on page 231, may be safely used by a good nurse or intelligent patient. Nevertheless, on the first few occasions the surgeon should personally supervise the introduction and amount of pressure put upon the bougie, and if the stricture be high up, or if there be any cul-de-sac below it, as is sometimes the case, the patient should be thoroughly taught when the bougie is really within the stricture before he is entrusted with its use.

The first question to be decided is the kind of bougie to be used. For my own part, I am in the

FIG. 15.

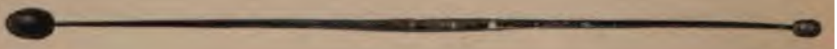

FIG. 16.

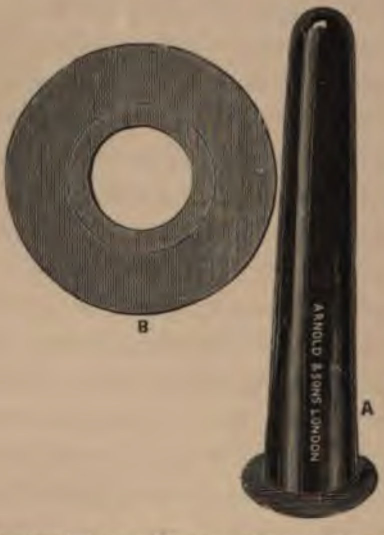

FIG. 15.—Olivary-headed Sound for measuring the length of a Stricture (See p. 220.)

FIG. 16.—A, Conical Bougie; B, India-rubber Flange.

To face page 231.

habit of using two forms of bougie; the one, a set of straight vulcanite bougies, graduated in size from 1 to 12, and about 8 inches in length, ending somewhat abruptly in a rounded extremity. It is well to have the set made so that the alternate sizes fit the one into the other, for it will be found convenient to be able to carry five sizes all within the outside case of a No. 12. These simple cylindrical bougies are of value in ascertaining the diameter of the stricture, or what advance has been made during the progress of the case. But for purposes of dilating the stricture and carrying out the treatment, I greatly prefer short conical bougies. Messrs. Arnold & Sons have made some sets of these, which I consider faultless. They are made in twelve sizes, and each bougie has a slight uniform taper from base to apex, while their length gradually increases from four and a half inches in No. 1, to five and a half inches in No. 12. The diameter at the base increases regularly from a quarter of an inch in No. 1 to an inch and three-eighths in No. 12; while the apices have a diameter, respectively, of three-eighths of an inch to No. 1, to fifteen-sixteenths of an inch in No. 12. Each bougie has a narrow flange at its base, and with each is supplied a broad soft india-rubber ring, which can be slipped over the bougie, forming a second flange an inch wide, which prevents the possibility of the bougie slipping into the rectum. The extreme ease to the patient with which these bougies, from their conical form, will pass into the stricture, while at the same time the certainty and complete absence of violence with which they may be passed by the surgeon, render them immensely superior to instruments with a uniform diameter. Moreover, they can be much more safely entrusted in the hands of the patients, who have not the same temptation to thrust them through the stricture regardless of resistance. Their slightly wedge-like action exerts a gentle continuous pressure on the contracted bowel, which cannot be attained by any other means. The way I proceed with the treatment is as follows:—A small injection of warm oil and water should be administered to the patient, and, if possible, passed away half an hour prior to the use of the bougie. Such an injection not only relieves the bowel, but in some measure soothes the sphincter and levator ani muscles, rendering them less irritable and spasmodic during the passage of the instrument. The patient, lying on his side with one knee drawn up, I will assume that a No. 2 straight bougie will pass through the stricture with only a very slight amount of resistance; but that on trying the next size larger it will not pass, or will only do so if some amount of force be used. Now is the time for using the conical bougie. A size should be selected equivalent to No. 2 at the point. This will, after being well oiled, pass readily into the stricture, but from its conical shape will soon become arrested. It should then be pressed steadily against the stricture as long as the patient can conveniently bear it, which may be somewhere between a few minutes and an hour.

A perineal bandage, in which a piece of elastic webbing is inserted, I have found useful for keeping up pressure. After the conical bougie has been used for a few days, it will be generally found that the

No. 3 bougie, which before fitted so tightly, will pass with ease. The next size conical bougie should then be taken into use, and so by constant perseverance the stricture may in a certain number of cases be fully dilated; or at any rate so much relieved as to admit of the patient passing motions in comfort. The contraction is liable gradually to return, but this may be kept in check by the occasional use of a full-sized bougie.

It will naturally occur to the surgeon's mind, seeing the rapid advance sometimes obtained in the treatment of urethral strictures by the constant retention of the instrument, whether analogous results might not be obtained in the rectum.

I have certainly had extremely satisfactory results in two or three cases from keeping a bougie in the stricture for a few hours in the twenty-four. In the following case, by keeping in the stricture a gradually increasing sized bougie almost constantly for three weeks, I was enabled to pass a No. 11 bougie with ease where only a No. 2 could be passed at the commencement.

Case 54.—A lady was recommended to consult me by Dr. Marchant Jones, of Plymouth. The trouble had commenced some years ago, with what was called an attack of dysentery, which was followed by difficulty in passing the motions. This gradually increased, so that the motions became small and pipe-like, and were accompanied by a tenacious discharge, which sometimes came away instead of the motion. The bowels hardly ever acted without a purgative, and the action was almost always attended with pain and distress. The patient had undergone various forms of treatment with only a very temporary benefit. Upon examining the anus it appeared normal with the exception of a slight unhealed crack, the remains of a wound made in dividing the sphincter some months previously.

On passing the finger into the bowel a stricture was felt at an inch and a half to two inches from the orifice. Upon gentle pressure this admitted the finger-tip, and by keeping the pressure continuously on the stricture for five or six minutes, the finger could be passed half an inch into the stricture; it could not be passed further, partly on account of the pain, and partly from the stricture becoming narrower; in fact, it was not unlike passing the finger into an extinguisher. On withdrawing the finger the sensation was experienced of its being slightly grasped as if by an elastic or muscular strap. The patient was confined strictly to bed, and I passed a small conical bougie, such as would enter the stricture without causing pain. This was tied in, and with the exception of being removed for half an hour on two occasions, was retained within the bowel for forty-eight hours. Its presence occasioned discomfort, but no pain. On removal I found that I could pass my finger readily into the stricture, which involved about three-quarters of an inch of the length of the gut. On moving the finger within the stricture, I was distinctly conscious that, to a limited extent, the part tightened or relaxed its pressure, a phenomenon that I think could only be attributed to muscular action.

After three weeks' treatment by the almost continuous retention of bougies the stricture had so far yielded as readily to admit a conical bougie $1\frac{3}{16}$ of an inch in diameter at the base, and the patient obtained complete relief from all the previous distressing symptoms. I advised her to pass the instrument daily for two months, and then twice a week. Six months later she called upon me; she had completely regained her old health and strength, and had no pain or trouble of any kind with the bowels. I made a careful examination of the part, and could detect absolutely no trace whatever of the old stricture.

In other cases I have been disappointed, the rectum becoming irritable and intolerant from the presence of the instrument, so that its use had to be discontinued for a while. Indeed, this is sometimes the case when the bougie has only been kept in for a few minutes daily. Patients may have been doing well for some weeks, making satisfactory progress, when they commence to complain of increasing pain. This is followed by more discharge, while the folds of the skin about the anal margin become tender, red, and œdematous. In these circumstances the bougie cannot be tolerated, and has to be discontinued. In such a case it may be right, when the inflammation has quieted down again, to resume gentle attempts at gradual dilatation, or the stricture may be treated by division.

During the treatment by bougies, or for cases in which active treatment has for any reason to be deferred, the question may arise as to whether by any general or local medication the patient's symptoms may be alleviated. If there be grounds for suspecting syphilis, a short course of mercury and iodide of potassium may be tried. The following prescription is a useful one :—

Pot. iodidi, ʒi.
Liq. hydrarg. perchlor., ℥iss.
Tinct. aurantii, ʒiij.
Aquæ destil., ad ℥xij.

Dose—a twelfth part three times a day.

The idiode may be increased or diminished. Sometimes it may be more desirable to give small doses of the hydrarg. cum cretâ. Two grains twice or three times a day is the proper amount. All patients taking mercury should be under medical supervision, its effects requiring to be carefully watched. The cases in which mercury is likely to be of benefit are those in which the symptoms are comparatively recent, and before an unyielding fibrous stricture is permanently established. If there be no history of syphilis, its administration is worse than useless. When the patient's stomach can bear it, a dessert-spoonful of cod-liver oil two or three times a day may not only have a beneficial effect on the patient's general condition, but it softens the stools, facilitating their passage through the narrow part. The diet should be of such a nature as to leave as little refuse as possible. For a while an exclusively milk diet is sometimes beneficial, and gives much rest to the lower part of the bowel. Charcoal and bismuth are useful in lessening the irritability of the bowel. The dose should be thirty grains of the former with five of the latter three or four times daily.[1] Purgative medicine is to be avoided, for it causes a most unpleasant griping. If, however, it should be necessary, a small quantity of Friedrichshalle water (℥iv) or Carlsbad salts may be tried. As to local medication, considerable relief may be obtained by a full oil-and-water injection every morning. A second injection may be sometimes given with advantage after the first has come away. The thorough washing out of the part thus obtained often greatly diminishes the desire to defecate. After the enema, half an ounce of warm thin starch, to which twenty drops of laudanum have been added, may be injected up the bowel with a small syringe. This small starch-and-opium injection is often an advantage the last thing in the evening (see page 381). Sometimes a morphia and glycerine suppository may be substituted, but, as a rule, I prefer the starch injection, as giving most relief. Suggestions for treatment, when ulceration is a prominent symptom, will be found in the preceding chapter.

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[1] Tanner recommends :—

℞ Liq. bismuthi et ammoniæ cit., ʒj.
Infusi quassiæ, ℥j.
A draught to be taken three times daily.

Internal Division of Stricture.—This procedure has been advocated by some surgeons, and on first consideration would appear to be a rational method of treatment. What, for instance, seems more reasonable on finding a stricture than to divide the narrow part, and thus restore the calibre of the bowel to its normal diameter? Yet this operation of internal proctotomy has not found general favour, and I have little hesitation in endorsing this common opinion, and consider the operation only of use in a few exceptional cases.

A careful surgeon, before recommending any operation to his patient, should well consider the possibility of aggravating the disease. Moreover, the smaller the chance of benefit to the patient the greater is the prominence that should be given to the risk of operative interference. After dividing a stricture internally, it has happened that instead of the wound healing, extensive suppuration with intractable fistulæ has taken place, and instances are not wanting in which death has resulted from purulent infiltration. The causes of such unfortunate results are not far to seek.

The rectum is a cavity whose outlet is more or less securely closed by the sphincter muscle. From time to time pressure is exercised from above, driving the fæcal matter downwards. The rectum thus becomes dilated and stretched till the resistance of the sphincters be overcome. If the mucous membrane and wall of the rectum be divided by longitudinal incision, the wound within will alternately gape widely when distended, or the edges will fall together when empty. In this way purulent discharge or fæcal matter readily becomes entangled in the cut. Acting there as a foreign body, suppuration is excited, and matter burrows, giving rise to troublesome if not dangerous complication. Curling[1] narrates a case in which after two or three slight notches only, a large abscess formed behind the rectum, and burst into the bowel behind the stricture; while Gosselin[2] performed internal division of stricture in a man, aged 56, the incision not passing beyond the limits of the contracted tissue, but the patient died on the eighth day from peritonitis.

There are occasionally cases which may be beneficially and safely treated by limited internal incision.

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[1] Curling, op. cit. p. 141.

[2] Bul'. de la Soc. Anat., 1874, p. 797.

These are the exceptional cases, in which the obstruction is the result of an exceedingly narrow band, feeling more as if caused by a tight hypertrophied fold of the mucous membrane than a contraction involving the deeper tissues.

Case 55.—E. O.,[1] aged 30, was admitted into St. Bartholomew's, under the care of Mr. Holden. The symptoms had existed for four years. On examination a stricture was found two inches above the anus. This was divided by three cuts—one upwards, two downwards. She was discharged much relieved. Two years later she was admitted with phthisis. Since her discharge she had been able to pass her motions with ease and of fair size, but still had pain; but on examination, as far as the finger could reach, no remains of the old stricture could be detected.

Linear Proctotomy, with complete Division of External Parts.—I believe this method to be one of the most valuable that surgery offers for the treatment of rectal stricture. It has been advocated by Verneuil, Van Buren, Kelsey, Allingham, and others, but yet it does not seem to have found general favour, for until quite recently it has been but seldom resorted to by the surgeons of our metropolitan hospitals. I have myself obtained such satisfactory results from complete linear proctotomy, that, when combined with careful after-treatment, I consider it affords a fair prospect of cure in otherwise intractable cases. Of course, I would not advocate any operation so long as there was a fair prospect of relief and permanent benefit by other means. In the earlier stages of rectal stricture much may be accomplished by the persevering use of the bougie; but unfortunately, in hospital practice, the cases are generally of long standing, and are often complicated by ulceration and fistula. In these circumstances the treatment by bougie is not improbably a failure. A certain advance may be made towards dilatation, as occurred in Cases 56 and 57, but it often happens that bougies after a while set up so much irritation and constitutional disturbance as to make their further use impracticable. These are the cases in which Verneuil's operation of linear proctotomy affords a prospect of permanent relief; but, as the history of my cases show, the complete division of the stricture is not, in itself, sufficient to cure the disease; for unless the greatest care be taken during the whole period of healing, the stricture will be again produced when the cicatrization is complete. Neither will it be advisable to operate unless there be a fair prospect of dividing the whole of the strictured part. Thus, tubular strictures, extending beyond reach of the finger, and involving several inches of the gut, cannot be treated by this means. Fortunately, however, according to my experience, annular strictures within reach are the commoner lesion of the two. The method of ascertaining the length of the stricture will be found on page 220.

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[1] Lucas Ward Register, vol. i. p. 341.

These are the details of the operation:—

The bowels having been thoroughly opened by castor-oil and an enema, the patient is placed in the lithotomy position under ether, the same as described for excision of the rectum. The left finger is then passed, if possible, through the stricture. If this cannot be done without violence, a probe-pointed bistoury should be introduced into the stricture; which is divided in the middle line behind sufficiently to admit the passage of the finger. A long, strong, curved, sharp-pointed bistoury, the point of which is protected by the finger-nail, is then passed well through the stricture, and the point made to transfix the rectal wall behind the contraction, coming out through the skin by the tip or the side of the coccyx. The parts are then cleanly divided by cutting outwards towards the anus. The nearer the incision is made towards the middle line, the less troublesome will be the hæmorrhage. The section being made, the parts should be examined, to feel if the whole stricture has been fairly and completely divided. If this be found not to be the case, the sides of the incision should be held asunder by an assistant, and the section completed by a probe-pointed bistoury or strong scissors. I consider the complete division of the stricture of considerable importance, and since the incision is made in the posterior wall, it may be boldly carried up for a considerable distance. There is no great objection to making this incision either by the écraseur or by the galvano-cautery, though I greatly prefer the knife, as making a far quicker and cleaner incision with less damage to the neighbouring tissues. Any vessel that can be seen spouting should be tied. After this has been done, it will be found that there is generally some free oozing from the upper angle of the wound, and it is but waste of time to attempt to stop this by ligature. A long strip of dry lint should be passed into the cut, and pressed firmly upwards and backwards. A dry sponge may then be placed over the anus, and kept well pressed against the part by a large pad of cotton-wool, firmly secured by a T bandage. The following day the cotton-wool and sponge may be removed. The piece of lint I leave, having it gently syringed with Condy. By the second day the lint generally comes away easily enough; if not, it must be removed by careful syringing. During the next ten days nothing is required beyond careful nursing and keeping the wound as clean as possible. The discharge is often very profuse, and since there is no control whatever over the fæces, care must be taken to prevent the parts becoming excoriated. At the morning dressing it is as well to wash the bowel as free as possible of fæces by enemata, and the bowels are best kept slightly confined by small doses of mistura cretæ.

By the tenth day I commence the use of the bougie, for it is less painful and troublesome to prevent contraction by beginning early than to resort to the bougie after it has commenced.

The following four consecutive cases were under my care during a twelvemonth in St. Bartholomew's Hospital, and will serve as examples of the treatment, and what may be expected from it:—

Case 56.—L. C., aged 20, unmarried, was admitted into St. Bartholomew's in October. Ever since she could remember she had had some trouble and difficulty in passing her motions. About a year ago the difficulty greatly increased, and she could only obtain relief after much straining. At first the pain was slight, but in a few months it became so severe that she dreaded an action. Six months before admission the fæces began to pass by the vagina, and lately she had scarcely passed anything by the natural passage. A motion was only obtained after purgative medicine. She was in a very miserable condition when admitted, being thin and anæmic. The labia were œdematous and excoriated, while round the margin of the anus were some red shining folds of skin, the parts being continually kept moist with fetid secretions.

Upon examination, a tight annular stricture could be felt two and a quarter inches from the anus, which would only admit the tip of the finger. Owing to a narrow vagina and well-marked hymen, the opening between the vagina and rectum could not be seen, though a probe passed from one to the other.

The treatment was commenced by the passage of No. 2 bougie, and at the end of three weeks a No. 6 could be passed. Beyond this no progress could be made. No. 6 bougie caused much pain, and its passage usually brought on vomiting, which was also the case even when smaller sizes were used. At the end of some weeks, owing to this vomiting, and the inflamed and painful condition of the parts, the treatment was discontinued. With the exception that less fæces passed by the vagina, there was but little improvement in her condition.

On Dec. 2, the patient being in the lithotomy position, I operated by first incising the stricture in the middle line behind, sufficiently to enable the finger to pass through, and then, with a strong sharp-pointed bistoury, transfixed the bowel above the stricture, the point of the knife emerging through the skin by the side of the coccyx. The knife was then made to cut its way out by dividing the whole of the intervening parts in the middle line to the posterior margin of the anus. A few small vessels required ligature, and a strip of dry lint put between the sides of the incision, with a pad and a T bandage, arrested the oozing.

Dec. 3.—Temperature, 103·5°. The T bandage was removed; she had a fair night; no bleeding.

Dec. 4.—Temperature, 101°. The plug of lint was removed, and the part dressed with oiled lint.

Dec. 5.—Temperature, 100°. She had little or no pain.

Dec. 19.—The wound was very healthy. On examination, the finger passed readily into the bowel. Nevertheless, some slight narrowing was already commencing towards the upper angle of the wound. No. 8 bougie was passed, and by the end of ten days No. 12 passed easily, the contraction having entirely disappeared. Five weeks later she was discharged from the hospital. She had control over her motions, and could pass a full-sized bougie for herself without pain. Her general health had greatly improved. She was supplied with a bougie, and told to report herself at the hospital in two months' time. This, however, she failed to do.

Nine months later, having obtained her address, I asked her to call at the hospital. She stated that she had given up using the bougie after a few weeks, because she had no trouble in passing her motions. Upon examination, the finger passed readily into the bowel, but a slight, ring-like contraction could be felt at the site of the old stricture. I passed No. 12 bougie, and urged the patient to continue its use. This, however, she did not do. Six months later, owing to neglect, the stricture had increased so as again to cause trouble. I once more divided it, so that it would admit a full-sized bougie without pain. I fear, however, from the disposition of the patient, she will not take sufficient trouble to prevent its contraction.

Case 57.—M. G., aged 33, came under my care in May. She was married, but had no children or miscarriages. Nine years ago she for the first time noticed a difficulty in passing her motions. For this she took much purgative medicine, with some temporary relief. She gradually became worse, and for the last three years she has been in the habit of trying to pass her motions a dozen times or more in the course of the day, only passing small quantities after great straining efforts, with but temporary relief. For the last two years she had noticed a discharge from the bowel. Although in daily pain and distress, she had not lost much flesh, and was a fairly nourished woman. On admission, at a distance of from 1½ to 2 inches from the anus was a tight annular stricture, through which it was impossible to pass more than the point of the finger. No. 2 bougie was passed with difficulty, and caused considerable pain. During the next fortnight, Mr. Hewer, our house-surgeon, daily passed a bougie, but no material advance was made in dilating the stricture. Being unable to pass my finger through the stricture, I was in doubt as to the extent of the disease; but found a small olive-headed bougie of great use in ascertaining the limited extent of the stricture. On May 22 I completely divided the stricture and the last two inches of the rectum as far back as the coccyx, in a similar manner as described in Case 56. With the exception of a slight rise of temperature on the third day, she had no constitutional disturbance. On the fourth day after the operation she passed a full-sized motion without the least trouble or pain.

After the tenth day a full-sized bougie was passed on alternate days, and kept in for an hour.

The following notes, for which I am indebted to Mr. Featherstonhaugh, her dresser, complete the case:—

June 2.—She could now hold her motions, but not for long.

June 14.—She sat up to-day for the first time. The bowels were opened without medicine and without difficulty.

June 24.—The posterior incision not yet completely healed, but it caused no trouble; no sign of stricture could be detected by the finger.

June 28.—She felt quite well and strong, and was up all day; had perfect control over her motions, and passed for herself daily a bougie an inch and a quarter in diameter.

July 9.—Still a small amount of the granulating surface of the wound remained unhealed. She had no difficulty either in passing or in retaining her motions, and no stricture could be detected by the finger. She was discharged from the hospital with directions to pass the bougie for herself daily.

Case 58.—L. D., aged 30, kindly transferred to my care by my colleague, Mr. Howard Marsh, was admitted in July 1882. She was quite well till eight years ago. She then for the first time noticed great pain after passing her motions. This continued till she married, two years later. She then consulted a medical man, who said she was suffering from fissure. He did something which caused great pain, and for the next six months she was worse rather than better. After this she greatly improved, though occasionally she had pain about the anus; but no straining was necessary when passing her motions, nor were they smaller than natural.

Three years ago she had a bad confinement, being a long time in labour, eventually being delivered by forceps. A few days after the confinement she suffered great pain about the rectum and the lower part of the body. This pain lasted a week, when it slowly got better. A few weeks after getting about, she noticed, for the first time, that she had great difficulty in passing her motions. This trouble steadily increased, and for the last year she had had much discharge from the back-passage. She now had a frequent desire to pass wind, but if she attempted to do so two or three spoonfuls of liquid discharge shot out. She suffered great pain, and was constantly tormented with the desire to pass a motion; which, when passed, gave little relief. She had lost flesh, and was now much emaciated. On examination under an anæsthetic, the anus was normal, with the exception of two slightly œdematous folds. At two inches and a half up the bowel, a tight stricture could be felt, through which the finger could not be passed. The bowel at the strictured portion moved freely upon the surrounding parts. She had been treated with bougies, which caused great pain, and from which little benefit was derived.

July 5.—The stricture and intervening parts were thoroughly divided. The hæmorrhage was pretty sharp for a few seconds, and two or three small vessels required ligature. The wound was kept clean, and treated in all respects in a similar manner to the case already described. She had no bad symptoms. Indeed, on the day after the operation, she expressed herself as feeling more comfortable and in less pain than had been the case for many months.

On the tenth day the wound was looking healthy, with a very copious discharge of pus. A full-sized bougie was passed. From this time, to her discharge from the hospital in August, this was done daily, and left in for an hour. On leaving the hospital her bowels acted regularly without pain or trouble, but she only had partial control over the sphincter. The wound had not completely healed, and there was still a slight discharge.

Feb. 12, 1883.—Mrs. D. called to see me to-day, seven months after the operation. She had no difficulty in going to stool, and had complete control over her motions and urine. She felt perfectly well in her general health, and only suffered occasionally from smarting pains. She was now far advanced in pregnancy. In answer to a letter of mine inquiring as to her health, in July 1883, I received the following reply:—

"I should like to call upon you, and explain how ill I have been lately. I have long been going to write you a letter of thanks for the cure you effected when I was at St. Bartholomew's Hospital. I trust, sir, you will believe me ever grateful for the operation which gave me so much relief after a number of years of intense suffering. It is only since the birth of my baby I seem to have gone back, and my symptoms are all new."

She called to see me, and I ascertained that she felt weak and poorly since her confinement. She had an idea that, two months previously, she had some slight attack of paralysis, and has become very nervous. She had no difficulty whatever in passing her motions, and she still used the bougie regularly. There was, however, some little discharge from the bowel, and some pain. On careful examination by the finger, there was absolutely no trace whatever of the stricture.

Case 59.—A. B. was admitted into Sitwell Ward, October 1883, under my care. Has had difficulty in defecation for the last eighteen months. On examination, an annular stricture was found at two inches from the anus, which would just admit the first joint of the forefinger. On each side of the bowel below the stricture was a cul-de-sac, each of which extended upwards three-quarters of an inch. On first examining this patient it was not easy to make out the exact nature of the case, for the finger slipped more readily into these blind sacculi than it did through the strictured orifice leading into the bowel. The same thing occurred when using a bougie.

Oct. 23.—Stricture and external parts divided.

Oct. 31.—No. 7 bougie passed.

Nov. 9.—No. 10 conical bougie passed daily.

Nov. 16 (Note by Mr. F. Eve).—Rectum examined. Rigid at the lower part. The two sacculi previously mentioned could still be felt, and would just admit the tip of the finger. No stricture could now be detected, but at the site of the old contraction there is a smooth surface, slightly smaller than the rest of the gut. The patient decidedly better, and now passes her motions easily and normally.

4. *Colotomy.*—This operation has, after some time, fought its way through prejudice, and at last come to be regarded as one of the regular and valuable resources of surgical art. Moreover, there is no disorder for which the operation has been practised, in which the results have been more lasting and satisfactory, than when performed for fibrous stricture of the rectum. Much has been said as to the loathsome and miserable condition in which the operation is supposed to leave the patient. My own experience leads me to regard such views as greatly exaggerated in the majority of cases. Indeed, some patients seem to have little more trouble in controlling their motions through the artificial opening than they would experience from the natural passage. But manifestly, in taking a fair view of the benefit of this operation, it is not right to compare the condition of a patient with an artificial anus with that of a person in perfect health, but it should rather be contrasted with the same individual's con-

dition when slowly dying from an otherwise incurable rectal stricture. Only quite recently a patient applied at St. Bartholomew's for some trifling ailment, who many years previously had been subjected to colotomy. He assured me his condition caused very little annoyance, and that he was quite as capable as before of performing his somewhat arduous duties as a porter. I also remember the case (60) of a man in whom my colleague, Mr. Willett, had performed colotomy two years previously for complete obstruction. The patient knew when he was about to have an action, had control over it, and stated that the motions from the artificial anus gave him no more trouble than they would from the natural passage. With due care in diagnosis, and by careful perseverance in treatment when discovered, it will be very exceptional for stricture to arrive at such a stage that colotomy affords the only chance of successful treatment; nevertheless, such cases will be met with from time to time, both in hospital and private practice; and amongst these will be found some of tubular stricture, which, although commencing near the anus, involve so much of the bowel as to render local treatment impracticable; while annular strictures, though amenable to treatment when near the anus, may become difficult to diagnose, and impossible to dilate when higher up the bowel. For further details of the operation of colotomy, the reader is referred to page 375.

Abscess connected with Rectal Stricture.—I will conclude this chapter by calling special attention to abscesses which occasionally form in the neighbourhood of a stricture, for such abscesses may cause death by obstruction, or bring about a fatal termination by suddenly breaking into the peritoneal cavity. By bearing in mind the possibility of these formations, obscure symptoms occasionally occurring in the course of the disorder may be explained, which, if recognized in time and the abscess opened, might save the patient's life. These abscesses generally form between the rectum and the uterus, in the neighbourhood of Douglas's pouch in the extra-peritoneal tissue. Their most probable course is to break either into the vagina or rectum, such as in Case 61, when all may be well, but it is their liability to burst into the abdominal cavity which forms their peculiar danger.

The course and symptoms of these abscesses may be gathered from the four following cases, all occurring in St. Bartholomew's Hospital, and I give them in some detail. The first case is of interest, owing to the remarkable recovery of the patient. Indeed, it is the only case within my knowledge, either from observation or reading, in which a spontaneous cure of a true rectal stricture can be said to have occurred. I had a daily opportunity of observing this patient, and give the notes of her case as I recorded them at the time in the surgical registration volume of the hospital.[1] The three remaining cases also form a valuable record, owing to a careful post-mortem having been made in each instance.

Case 61.—B. A., aged 27, was admitted under the care of Mr. T. Smith. She had been married for four years, but never been pregnant. Before her marriage she was in business, and had often noticed a slight trouble in passing her motions.

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[1] Lucas Ward Register, vol. vii. p. 149.

She had acquired the habit of passing a motion only twice a week, and taking a dose of castor-oil previously. After marriage the trouble increased, and the act of defecation was accompanied by violent bearing-down pain.

She also lost blood, and had a most offensive discharge. She then became an out-patient of St. Mark's, and was treated by bougies; for the last year, however, she has had no treatment, has a slight constant discharge, has great pain and trouble with her motions, which are rarely formed, but when they are so, are of extremely small diameter.

She is emaciated, has sleepless nights, and suffers considerable pain.

Upon examination at the height of two inches from the anal margin there is an annular stricture, so tight as only to admit the tip of the finger. By gentle and long-continued pressure the finger-tip can be passed well into the stricture, but not beyond it. The sensation conveyed is that of a piece of string encircling the bowel external to the mucous coat. The bowel at the strictured part is freely movable.

Nov. 1.—Under an anæsthetic, No. 5 bougie was passed.

Nov. 4.—Bougie No. 5 passed daily.

Nov. 9.—Up and about the ward; feels well, but is constipated.

Nov. 10.—Rigor at 9 A.M. Temperature, 104°. Complains of headache and sickness, and some tenderness about the abdomen.

Nov. 11.—Vomiting continued till 11 P.M. last night, at which time after a morphia injection she had some sleep. Temperature, 103°.

Nov. 16.—For the last four days she has had profuse discharge from the rectum; the part is less painful, and the temperature, which has been gradually falling, is to-day 100°.

Nov. 25.—For the last few days the pain about the rectum has greatly increased, and the temperature has again risen.

Dec. 1.—Is now all day under the influence of opium; is very weak, has a thin careworn face, and has had no action since the 22nd. Has less pain in the rectum, but a frequent desire to pass water. Abdomen not distended.

Dec. 2.—Ordered a dose of house mixture. This caused great pain, but the bowels acted freely.

Dec. 9.—The stricture will now readily admit the finger without much pain, though bougies have been discontinued.

Dec. 23.—For the last week has complained of increased pain in the rectum. The evening temperature has ranged from 101° to 103°. Yesterday an abscess burst, and half a pint of fetid pus escaped per anum, which was followed by much relief.

Is very pale and wasted, has a free discharge of pus from the rectum, also at times from the vagina. Upon examination the finger can now be passed well into the stricture, but not through it.

Jan. 20.—Has a free discharge of pus through the anus, and some from the vagina. Matter appears to be collecting in the upper part of the vagina.

Feb. 2.—Abscess in vagina opened.

Feb. 17.—Pus still discharged through the vagina, but there is none from the rectum.

The patient became so weak that it was not considered likely that she would live long; but being very desirous of getting home, she was taken away from the hospital. On leaving the hospital the motions were only passed with great difficulty. She had a free discharge of pus from the vagina, but very little from the rectum. After returning home she felt somewhat better, and noticed that she could pass the motions a little easier, but that they were very small.

Towards the end of April she again felt worse, having febrile symptoms and intense pain about the lower part of the pelvis. At this time, one day when straining at stool, she felt something suddenly give way, and found that she had passed about a pint of thick pus by the rectum, immediate relief to the pain resulting. During the next week pus flowed from the back-passage, and then gradually ceased, and from that time she steadily improved.

Hearing from the sister of the ward that the patient was well, I wrote requesting her to come and see me, and found, nine months after her discharge from the hospital, that she had become quite rosy and stout. She stated that she felt perfectly well and strong, and passed full-sized motions without the slightest straining, pain, or discomfort. Upon examining the patient with my finger, there was no constriction whatever, but at the site of the old stricture a slight hardness could be felt on the anterior wall, all the rest of the bowel being perfectly soft and normal.

Case 62.—E. M., aged 49,[1] was admitted on Nov. 25, under the care of Mr. T. Smith, with the history that she had had syphilis sixteen years previously, since which time she had always had a great deal of trouble about the rectum. The bowels had been much constipated, the motions small, and the passing of them accompanied by forcing pains. Upon examination, there was considerable ulceration of the part. The bowels were generally opened but once in four days. She was ordered iodide of potassium internally, and lotio nigra to be used as an injection.

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[1] Stanley Ward Register, St. Bart.'s, vol iv. p. 228. (Notes by E. Milner.)

Under this treatment she improved, and was to have been discharged on the 17th of December, but since on that day she did not feel well, complaining of sickness and discomfort, she was allowed to stay in a day or two longer. Two days later, about four in the morning, she got out of bed, and complained of feeling sick and faint. Two hours later she was found dead in her bed.

Post-mortem. — Body somewhat wasted. No signs of syphilitic disease on the skin. Vagina very spacious; posterior wall considerably prolapsed. Upon opening the abdominal cavity, it was found to contain from two to three pints of pus. There was no peritonitis, but an abscess situated between the rectum and vagina had burst into the peritoneal cavity. On removing the rectum and vagina, there was found an immense abscess cavity between them, which was evidently the source of the pus. The abscess appeared to communicate by small valvular openings both with the vagina and rectum. The internal surface of the rectum was much ulcerated and thickened, and was covered with excrescences. There was no appearance of syphilitic disease in the brain or in any of the internal organs.

Case 63.—E. G., aged 35, was admitted to the hospital, September 20, 1873.[1] For two years she had suffered pain in defecation, every motion being preceded by a thick discharge. She was married, but had had no children or miscarriages. There was no history of syphilis. For some months she had been treated as an out-patient, bougies being passed. An examination showed a tight annular stricture one and a half inches from the anus.

During October she was treated by the occasional passage of a No. 4 bougie. A larger size was tried, but could not be passed. In the first part of November No. 5 was occasionally passed.

Nov. 20.—Has not been so well for the last few days; takes her food badly; No. 6 passed.

Nov. 24.—Feels very ill; pulse 106; temperature normal. A swelling, which has been noticed for some little time in the left groin, seems to have disappeared this morning. The groin is painful on pressure.

Nov. 25.—A severe rigor early this morning. Temperature 103°; pulse 128. Has been twice sick. Pus was passed in her motion, which now runs freely away from her.

Nov. 26.—Gradually became unconscious, and died during the night.

Post-mortem.—Body fairly nourished, and the organs of the chest healthy. Upon opening the abdomen there was no general peritonitis, but in the left iliac fossa the intestines were glued together with recent inflammation. There were also some old inflammatory adhesions. The kidneys were large. There were no abscesses in any of the internal organs, and no free pus in the peritoneal cavity. The left Fallopian tube was distended, and nearly the size of the small intestine, and stood out in the left iliac fossa. A probe could not be passed from the uterus into it.

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[1] President Ward Register, St. Barth.'s, vol. iii. p. 88.

The rectum was much dilated above a well-marked annular stricture. Near the stricture were three holes in the bowel, two of which communicated with a large abscess cavity, occupying a good part of the pelvic cavity on the right side, and behind the rectum. The abscess had no communication with the one in the Fallopian tube.

Case 64.—R. J.,[1] admitted to the hospital Dec. 29. The patient states that she had been treated in the hospital four years ago for dysentery, but she remained in good health till Christmas 1881, when she entered Guy's Hospital, and was operated upon for fistula. About three months ago she became ill, and has since been lying up. On admission she was wasted, and very weak. She could not hold her motions, which were quite loose.

Jan. 5.—Examined under chloroform. Around the anus were several œdematous piles. The sphincters were much relaxed. About three inches up the bowel the finger encountered an annular stricture. The stricture and recto-vaginal septum felt hard.

Jan. 13.—Belly much distended, scarcely anything passed by the rectum; colotomy advised, but declined; constant vomiting.

[1] Stanley Ward Register, St. Barth.'s, vol. x. p. 173. Notes by J. Macready.

Jan. 16.—Death.

Post-mortem.—The pelvis was found filled by a tumour which presented a smooth and rounded surface. To the right side of the upper surface of the swelling the cæcum was adherent. To the posterior wall the lower half of the sigmoid flexure of the rectum was attached. Over the front of the tumour the uterus was stretched and flattened out, so as to appear to form part of its walls. The bladder was stretched over the front surface between it and the pubes, but was not adherent.

On examining the rectum with the finger before removing the cyst, a narrowing of the bowel was felt about three inches from the orifice, and was due to the lower border of the cyst pressing towards the sacrum, and compressing the gut. The finger could be passed beyond the narrow part of the bowel, and there was no occlusion of the canal in any portion. Subsequent examination of the rectum showed that it was ulcerated over the lower six inches. There was a distinct line at the upper limit of the ulceration, marking it off from the healthy mucous membrane above. The rectum presented numerous fistulæ. One of these beneath the tumour admitted a probe, which entered the lower part of the cavity by a valvular opening.

The tumour proved to be a huge abscess, containing thick greenish pus, and had a smooth thick wall. The abscess lay in Douglas's pouch, closely applied to the rectum behind, and the uterus in front. Other parts of the intestine and internal organs healthy. Pelvis of right kidney somewhat dilated by pressure on the ureter.

CHAPTER X.

PRURITUS ANI.

THE irritation and itching about the anus designated by this name is an exceedingly troublesome affection, for although the ailment is in no way dangerous to life, yet it often produces a considerable amount of ill-health by seriously interfering with the night's rest. In some instances the cure is easy and simple, in others the greatest perseverance and patience is required before a material improvement is obtained. The severity of the disorder varies considerably, ranging from a slight amount of irritation to an itching which is almost intolerable. Most frequently the irritation comes on when the sufferer gets warm in bed. Relief is sought by scratching, but this only aggravates the condition by the eczema it produces. If the part be examined, occasionally little or no morbid appearance is presented, but more commonly the skin about the anal margin is red and hard, and it is thrown into several deep folds, which appear to be drawn almost into the external sphincter. On separating these folds the skin will sometimes be found in an eczematous, moist, and excoriated condition. If the case be of old standing, the skin has lost much of its suppleness, feeling harsh and rough, while the natural pigment peculiar to this situation is absent.

The source of this troublesome affection is to be sought both in general and local causes, or in the combination of the two. Amongst the local causes minute threadworms are common, and occasionally pediculi are present, while a vegetable parasite causing "eczema marginatum" is sometimes the source of irritation. Internal piles are the occasional cause of pruritus, the congestion of the muco-cutaneous margin thus produced rendering in some persons the surface peculiarly irritable. An analogous condition is to be found in the extreme irritation of the legs and the thighs in some women during pregnancy, from the pressure on the iliac veins. Again, in some persons the skin when congested is extremely liable to ezcema, as can be constantly observed about the legs of those suffering from varicose veins. Indeed, ezcema of the part is a frequent complication of pruritus. In other cases, the general constitutional condition plays a more important part than any local defect. Many of these patients are gouty, or have a more or less marked lithic acid diathesis. It will be observed that such patients are liable to ezcema in other portions of the body, and that such attacks are produced or aggravated by errors or carelessness in diet.

Treatment.—This must be directed both towards the general and local condition of the patient. If the sufferer has a lithic acid diathesis, he must be treated accordingly. Such a prescription as the following (Brodie) :—

℞ Magnesiæ, gr. vj.
Potassæ bicarb., gr. xv.
Potassæ tartratis, gr. xv.

To be taken in water twice a day three hours after meals.

The second dose may be taken with advantage on going to bed.

Lithiæ carbonatis, gr. iv.
Aquæ destil., ℥iv.

To be taken twice a day, is also a useful prescription. The above remedies may be tried for ten days or so, when their effect can be measured. In the meanwhile the diet may be regulated on the lines laid down on page 85. Regular exercise, so as to produce sweating, should be encouraged, or, if this be impracticable, a Turkish bath once or twice a week may be tried as a substitute.

Having taken into consideration the treatment of any constitutional defects that may be detected, local remedies become important. If from examination pediculi or threadworms can be observed, the cure is easy. The free application of the unguentum hydrarg. ammoniatæ is effectual in the former, while injections of lime-water may be tried in the latter. If there be a suspicion of eczema marginatum, the following ointment often proves very beneficial:—

Unguentum sulph., ℥j.
Unguentum hydrarg. nitratis, ʒij.
Acidi carbolici, ʒss.

The unguentum hydrarg. oxidi rubri, I have also tried with success. Occasionally, ointments seem to disagree, when one of the following lotions may be well dabbed on the part, those containing boracic acid being especially serviceable. The simplest lotion of this kind is two drachms of boracic acid to the half-pint of water. Kelsey advises the following formula :—

℞ Sodæ biboratis, ʒij.
Morphiæ hydrochlor., gr. xvj.
Acidi hydrocyanic. dil., ℥ss.
Glycerinæ, ℥ij.
Aquæ, ad ℥viij.

Dr. Carson considers the following ointment a specific for pruritus :—A drachm of camphor should be powdered very finely, but not dissolved by too much spirit of wine, and then rubbed up with an ounce of lard. This ointment should be applied by the finger both within the anus and round the margin.

Two grains of bichloride of mercury to the ounce of lime-water is often a valuable application. Before using any of these applications the part should be thoroughly washed with soap and water.

If the itching be so severe as to prevent sleep, firm local pressure is often very beneficial. This can be applied by obtaining an oval piece of wood the size of a walnut, which, after being wrapped in several layers of lint, can be pressed firmly against the anus by means of a T bandage. Ease is sometimes obtained by the passage and retention of a conical vulcanite plug within the bowel. This should be about the thickness of the little finger and an inch and a half in length. The plug should be provided with an india-rubber ring to prevent it slipping within the bowel. Another means I have found successful in allaying the irritation is by thoroughly bathing the part with water for five or ten minutes as hot as can be borne. Lastly, it must be remembered that pruritus may be but a symptom of more serious disease about the part, such as fissure, piles, or even cancer, so that the possibility of these complications must be borne in mind.

CHAPTER XI.

IMPACTION OF FÆCES AND FOREIGN BODIES IN THE RECTUM.

It occasionally happens, especially in elderly people, that a mass of fæcal material collects and becomes impacted in the rectum, a condition which, if not recognized, may lead to complete obstruction. There are various causes for these accumulations. Sometimes they result from the nature of the food taken, at others they depend on some purely local condition. Rectal concretions were a marked feature during the Irish famine of 1846, and an interesting paper[1] was published at the time on this subject by Dr. Popham, Physician to the Cork North Infirmary. Many cases were admitted into the infirmary for intestinal obstruction, the result of enormous concretions. After removal these were found to consist of diseased portions of potato mixed with the undigested peel, which famine had driven the miserable creatures to consume.

As met with in ordinary practice, the collection consists of hard fæces in the rectal pouch which, either from want of effort on the part of the patient or the fear of pain, have been allowed to accumulate until, from the size of the mass, all power of expulsion is lost. The symptoms, such as constipation, distension, and pain, generally point pretty clearly to the nature of the disorder, but owing occasionally to the occurrence of diarrhœa, a mistake in the diagnosis has been made.

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[1] Lancet, 1850, p. 80.

Cruveilhier has called special attention to this matter, and aptly compares the occurrence to the overflow of urine from a distended bladder. The rectum being full of solid fæces, its mucous membrane becomes irritated, giving rise to a mucoid discharge which, being darkly stained by a fæcal collection, is mistaken for diarrhœa, as in the following case:—

Case 65.—M. F.[1] was admitted into the hospital, complaining that she had incontinence of fæces since being operated upon for piles six weeks previously, and she stated since the operation she had been "quite unable to hold her motions." Upon examining the patient, I found the sphincter very weak, and the rectal pouch enormously dilated by a mass of putty-like fæces, small portions of which were constantly coming away with the mucoid discharge. The mass with some difficulty was washed away by copious water injections. The patient was discharged five days later completely relieved.

In treating these cases, purgatives should not be used, for the obstruction is purely mechanical, and must be remedied by local means. The lower and harder portions of the collection are best removed with the handle of a spoon, after which the remaining part can be washed away by free warm water injections.

Foreign Bodies in the Rectum.—Owing to the mechanism of the sphincter muscle, and the pouch situated immediately above it, the rectum is a common situation for foreign bodies, after passing safely through the alimentary canal, to become arrested. The liability of fish-bones and other sharp fragments to do injury in this position has been already referred to in the chapter on Rectal Abscess, but such bodies may be frequently removed without any further trouble ensuing. Bodies swallowed pass to the rectum with surprising rapidity.

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[1] Lucas Ward Register, St. Barth.'s, vol. vii. p. 256. Notes by author.

Case 66.—A man was admitted[1] complaining of great pain about the anus. He had been wearing a hard irregular vulcanite plate in the mouth, which was in position on his going to sleep. In the morning he missed it, and it could not anywhere be found. On examining the anus with the finger, the lost plate was discovered tightly wedged just within the sphincter.

Foreign bodies are sometimes introduced into the bowel by the anus, and human ingenuity seems to have been much exercised in this matter, judging from the extraordinary variety of articles thus mislaid. The most remarkable case within my own knowledge occurred in the practice of Dr. Burnett, of Mottram. Dr. Burnett has very kindly furnished me with the following particulars, interesting not merely from the extraordinary nature of the foreign body, but also from the skilful treatment employed in its removal.

The history was obtained from the patient's wife, the patient himself refusing any information on the subject.

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[1] Harley Ward Register, St. Barth.'s, vol. vii. p. 449. Notes by author.

Case 67.—"C. S., a tall robust man of temperate habits and sound mind, returned home after remaining at his work a few hours, looking blanched, feeling faint, complaining of having lost a large quantity of blood from the bowels. Soon afterwards he disclosed to his wife that before going to work he had forced a jam-pot up his seat, and whilst there, owing to a constant desire to go to the closet, and finding that the pot completely obstructed a motion, he proceeded with a poker to knock out the bottom, which was uppermost. This was followed by considerable hæmorrhage, and the symptoms mentioned. He then solicited his wife's aid, but as she was unable to remove it with her finger, he requested her to purchase a hammer and smash it. This she refused to do, and begged to be allowed to send for me. But, being ashamed of his conduct, he would not consent, saying that he would see a surgeon out of the place. This he did not do, but at the end of six days, on account of pain and nausea, he consented to my being called in.

"I found him complaining of colicky pains and nausea, while the abdomen was swollen and tympanitic. On examining the rectum, I found a jam-pot, which measured two and three-quarters of an inch in diameter and three inches high, tightly embedded in the rectum; the lower portion or mouth of the pot being an inch above the sphincter, the surrounding parts being swollen, soft and pulpy. The inside of the pot was full of intestine, in the same condition, which had prolapsed through the broken bottom, by the constant straining in attempts at stool. Owing to the patient objecting to the knife, and finding it impossible to dilate the sphincters to the necessary extent, I resorted to crushing with Lever's craniotomy forceps, breaking as much of the sides of the pot as I could include between the blades, removing the pieces with polypus forceps. By successive crushings and syringings, which occupied an hour and a half, I succeeded in removing the whole of the obstruction.

"The patient recovered without any unpleasant symptoms. The principal difficulty I experienced in the operation was from the prolapsed bowel, and the external wall closing in as each portion was removed, completely burying the remaining parts, and making it extremely difficult to apply the blades without including a portion of intestine. The patient refused to take chloroform."

The method of removing foreign bodies must depend upon their nature. Fish-bones and similar small objects can generally be taken out with the finger and thumb without difficulty, but if there be any trouble, the patient should be placed under an anæsthetic, and the sphincters carefully dilated. By this procedure the risk of tearing or damaging the mucous membrane is much diminished.

CHAPTER XII.

POLYPUS OF THE RECTUM.

Two forms of polypus are commonly found in the rectum; the one, the *fibrous polypus*, a pedunculated tumour chiefly composed of fibrous cellular tissue; the other, the *adenoid polypus*, a soft vascular growth of pedunculated gland tissue. The villous tumour, though closely allied to this latter variety, will be separately considered. As extremely rare growths, to be regarded rather as pathological curiosities than of clinical importance, are the two excrescences described as the dermoid polypus, and the cystic polypus.

The polypoid growths of early life attached to the bowel by a well-marked pedicle, are of an innocent nature, but the villous tumour, especially when growing from a broad base, is not so certainly benign, occasionally showing a tendency to return *in situ* after removal.

The typical polypus of the rectum occurs as a growth, varying in size from a pea to a small walnut, and is attached to the bowel by a narrow pedicle often an inch or two in length. If the structure of one of these growths be more closely examined, it will be found that the pedicle consists of a mucous membrane, in the interior of which is retiform tissue, supporting the blood-vessels, supplying the mushroom-like head of the polypus. The structure of the mucous membrane of the pedicle is identical with that of the normal membrane lining the bowel; its follicles, however, are somewhat atrophied, extending to a less depth than usual, while the lining epithelial cells are not so long or column-shaped as in the normal state.

In both forms of polypus the pedicle is alike, and it is in the expanded head that the difference in structure between the two varieties is observed.

The *adenoid polypus* will be first considered, as representing the more complex structure of the two. The head of this polypus is seldom larger than a hazel-nut, while its pedicle, no thicker than a crow-quill, may be of two or three inches in length. To the naked eye the pedicle has the same smooth appearance as the mucous membrane, but the head from being lobulated resembles a raspberry. If the growth be examined in section under a low power, it can be seen that the fibrous tissue of the stalk, on entering the head of the polypus expands, forming a central nodule of fibrous tissue. Radiating from this central nodule are fibrous branches of greater or less extent. These form the central supporting stalks of the lobes and lobules composing the surface of the growth. From these main branches fibrous twigs are given off, which, expanding into a delicate retiform tissue, furnish the supporting framework of the epithelial covering (see Plate V., fig. 1). The epithelial covering consists of a single layer of columnar cells arranged in a bipenniform manner on the retiform tissue, so as to form a beautiful leaf-like or feathery surface when examined under the microscope.

However intricate is the pattern formed by the branches and leaves of the expanded head of the polypus, the epithelial covering is in direct continuity with the cells covering the stalk, and through these with that lining the intestinal surface. (See Plate V.)

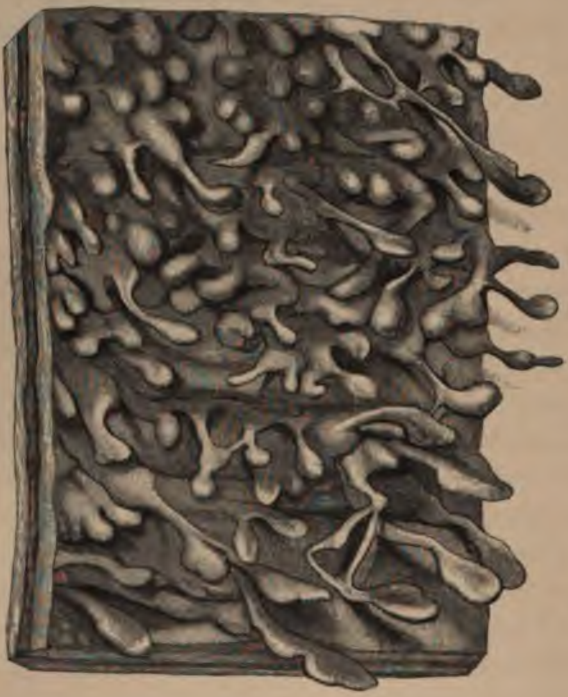
If the central nodule of fibrous tissue be small, while its radiating branches are long and luxuriant, so much greater will be the surface for spreading out the epithelial layer, and the resulting polypus will be soft and vascular. On the other hand, if the central nodule be large, while the radiating branches are short and shallow from it, the growth will have a corresponding hardness and closeness of texture.

It will be seen from the foregoing description that the adenoid polypus is the result of an abnormal development of both the fibrous tissue element and the columnar epithelium. It is in fact an extreme exaggeration of the plan upon which the normal mucous membrane is constructed.

A further detailed account of the microscopic anatomy of these growths will be found in the chapter on Adenoid Disease. (Chapter XIV.)

The second variety—the fibrous polypus—differs from the preceding in that it consists of a definite fibro-cellular tumour, covered by a normal mucous membrane. It would appear that the polypus in this case commences as an hypertrophy of a limited portion of submucous tissue. The hypertrophied nodule is at first merely embedded in the rectal wall, but as it grows it becomes gradually extruded

Fig. 17.



DISSEMINATED POLYPI.

The mucous membrane is thickly studded with growths—some forming simple rounded elevations, others stalked processes an inch in length. The disease extended from the ileo-cæcal valve to within three inches of the anus.—Drawn from a specimen in the Middlesex Hospital Museum.

To face page 273.

into the canal of the bowel, so that after a while a pedunculated tumour is produced, still covered by mucous membrane.

I believe the two forms of polypus—the adenoid and the fibrous—are as distinct in their origin as are the warty papillomas of the skin from the pedunculated fibrous tumours in cases of molluscum fibrosum.

Polypi, whether of fibroid or adenoid variety, are commonly single, but not infrequently a second, or even a third, may be found in the same rectum; while occasionally a far graver disease is met with—*disseminated polypi*—in which considerable areas of both the rectum and colon are thickly studded with polypoid growths.

In the living subject I have met with but two instances of disseminated polypi, nor do our pathological collections furnish many specimens of the disorder. Some few years since, in a search through the London museums, I could only find three specimens of these disseminated growths.

The first specimen is in the Middlesex Hospital museum[1] (see woodcut). It is beautifully preserved and carefully mounted, and thus described in the catalogue:—

"The mucous membrane is thickly studded with growths, some forming simple rounded elevations, others stalked processes, varying in length from a quarter of an inch to an inch, with club-shaped ends. In many places the ends are branched, and in some the ends of neighbouring ones are united together, so as to form an irregular meshwork

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[1] Middlesex Museum, Series 8, No. 100.

They extended from above a cicatrix which was situated three inches from the anus to within a short distance of the ileo-cæcal valve. The patient was a man, aged 46, who died in the hospital from phagedænic ulcer of the foot, and had suffered from ulceration and bleeding of the bowel for three years."

To this description I will add that the mucous membrane looks exactly as if it had been cut into narrow strips an inch long, and these strips detached except at one extremity. This specimen is very remarkable, and it is much to be regretted that a microscopic section of the growth could not be obtained.

The second specimen is in Guy's Hospital museum.[1] Here the stalks are very fine, and of a uniform diameter, projecting from half an inch to an inch into the bowel. They do not expand at their extremities into any definite head, and are scattered pretty regularly over the surface of the bowel, there being one or two to each square inch. The catalogue gives no account of this rare specimen.

The third specimen is in King's College Museum, and owing to the courtesy of Mr. Henry Smith I am able to furnish a drawing of it (see woodcut). In this case the growths are undoubtedly adenoid. They were growing in the colon, and formed a mass the size of a cricket-ball. Each growth was pedunculated, varying in size from a pea to a hazel-nut, and they were about seventy in number. Many of the growths sprang from a common pedicle, others

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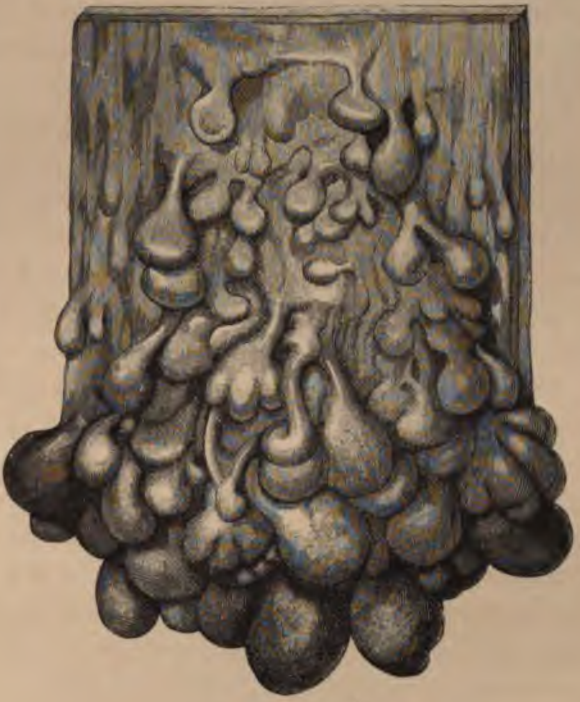
[1] Guy's Hosp. Museum, No. 1863^{80}.

FIG. 18.



MULTIPLE POLYPI.

A mass of adenoid polypi the size of a cricket-ball. Each growth is pedunculated, varying in size from a pea to a hazel-nut.—Drawn from a specimen of Mr. H. Smith's in King's College Museum, London.

To face page 274.

were isolated. The pedicles were from half an inch to two inches in length; some of them thin and round, like the stalk of a cherry, others flattened and ribbon-shaped. Scattered through the rest of the colon were a few isolated polypi, but towards the rectum they again became more numerous. The patient died from peritonitis ten days after the removal of some polypoid growths in the rectum.

The two cases I observed during life occurred when I was Surgical Registrar at St. Bartholomew's, and I exhibited sections of the growths at the Pathological Society.[1]

Case 68.—A boy, aged 19, was admitted under the care of my colleague, Mr. T. Smith. So far as was known, he was a healthy child till nine years of age. It was then noticed that after being exposed to cold one day, he had considerable hæmorrhage from the rectum. Six months later a bleeding protrusion was occasionally observed after defecation. He was admitted into a hospital, and the protrusion removed when he was eleven years old. The symptoms were temporarily relieved, but returned again in a couple of years. He was again subjected to operation, with only slight relief. Since that time he has on three occasions, at St. Bartholomew's and other hospitals, had growths removed from the rectum, but without permanent benefit. When admitted into St. Bartholomew's he was extremely anæmic, having suffered severely from hæmorrhage for some months. His pulse was rapid, and he seemed scarcely in a condition to bear even an examination. After a few days' rest in bed he recovered from his collapsed condition, no more bleeding having occurred, but there was a free mucoid discharge. On examination under chloroform with the sphincter dilated, several mulberry-like growths were observed, varying in size from a pea to a filbert. Some of these had little or no pediculi, while others had well-marked stalks half an inch in length. The growths were soft, nor was there any induration about the mucous membrane from which they sprang. By the aid of a duck-bill speculum, from twenty to thirty distinct polypoid growths could be seen; besides which, others could be felt higher up the bowel by the finger, which failed to define any limit to the diseased condition of the bowel.

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[1] Path. Soc. Trans., vol. xxxiii. p. 165.

Case 69.—A girl, aged 17, was admitted into the hospital with symptoms almost identical with those just described. The trouble had been noticed for seven years, and she had twice been operated upon. The growths were rather larger, though less numerous, than in the boy; but the most interesting and extraordinary part of the case was the fact that she was his sister.

In both of these cases a few of the more prominent polypi were removed.

Disseminated polypi are generally adenoid in structure, as in Cases 68 and 69; but occasionally they are fibrous, as in a case[1] I recently examined with Mr. Bowlby, in which the colon was studded with polypoid growths in various stages of pedunculation. On microscropic examination, these were found to consist of loose connective tissue, covered by normal mucous membrane.

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[1] Path. Soc. Trans., London, vol. xxxiv. p. 107.

As has already been stated, polypi, whether fibrous or adenoid, are seldom larger than a hazelnut, but exceptions occur. The largest fibrous polypi I have seen is one that is now in our museum. It was exhibited by Mr. Bowlby at the Pathological Society,[1] who thus describes it (Case 70):—"A girl, aged 24, who had not been aware of anything the matter with the rectum, and who could give no symptoms pointing to the presence of a tumour, one day while straining at stool felt something come down which she was unable to return. Soon afterwards she was seen by Mr. Everley Taylor, of Scarborough, who found a large red mass about the size of a fœtal head protruding from the anus, and tightly gripped by the sphincter. Under chloroform, the tumour was found attached to the anterior wall of the rectum four inches up; after transfixion and ligature of its base, it was removed with scissors, its weight when fresh being two pounds all but one ounce. The tumour consists of very loose connective tissue, the meshes of which contain much viscid fluid. The base of attachment is about an inch and a half in diameter, and the growth is covered by normal mucous membrane."

Dermoid Polypus of the Rectum.—Of this rare tumour I know of but two recorded cases. Danzel[2] narrates the case (71) of a woman, aged 25, who complained of hairs protruding from the anus. Upon examination, a pedunculated tumour, the size of an apple, was found growing from the rectal wall, two and a half inches above the anus. Upon removal, the tumour had some long hair on its surface, together with a tooth. Brain-substance, enclosed in a bony shell, also formed part of the tumour.

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[1] Path. Soc. Trans., vol. xxxiv. p. 107. [2] Langenbeck's Archiv, 1874.

The second case occurred in the practice of Dr. Port, and was shown by him at the Pathological Society.[1]

Case 72.—"A girl, aged 16, was admitted into the German Hospital complaining of obstruction and a forcing pain upon any attempt to relieve the bowels. These symptoms were only of a recent date, about three months. Some days after her admission it was observed that a polypoid tumour of large size came partly out of the anus when the patient wanted to pass a motion. A mass of long hair repeatedly made its appearance, and could only with difficulty be replaced. Under chloroform, a round tumour was drawn down as much as possible, and its attachment, somewhat to the right of the middle line, three inches from the anal orifice, was ascertained. It was decided to delay an operation until the pedicle became more stretched. Three weeks later the tumour came out to its whole length, so that the sister in charge could not replace it. It soon became gangrenous, and was easily removed with the help of two ligatures. As regards its composition, the bulk of it was made up of fibrous tissue, with numerous fat cells. Embedded are two masses of bony substance, the one hard, the other of spongy consistency. The integument of the tumour shows all the characteristics of ordinary skin—epidermis, papillæ, hair follicles, and sebaceous glands. A well-formed canine tooth was observed to be growing from the tumour, not far from the pedicle."

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[1] Path. Soc. Trans., London, vol. xxxi. p. 307.

These dermoid polypi are probably closely allied to the congenital coccygeal tumours described in a subsequent chapter.

Cystic Polypus.—The following remarkable case of "cystic polypus" is recorded by Dr. Prideaux :[1]—

Case 73.—Mrs. H., aged 28, had an extremely difficult labour, the head being prevented from passing by some obstruction. She was eventually, after much trouble, delivered by forceps. After the labour, Mrs. H. complained of intense pain at one spot in the pelvis. The next day the belly was tympanitic, being distended with flatus, which could not be passed, owing to some obstruction in the rectum. On examination, a large swelling, about the size of a fœtal head, was found in the rectum. It moved freely, and was at first supposed to be a portion of intussuscepted bowel. As the case was obscure, it was determined to reopen the perineal wound (the perinæum had been ruptured at the labour), and enlarge it up to the recto-vaginal septum, thus exposing the tumour to view. On this being done, it was seen that the tumour was not covered by mucous membrane, its surface being rough and much injected. The tumour was dragged down, and found to be a cyst as large as a fœtal head, with a long narrow pedicle extending far out of reach up the bowel. At least six inches of pedicle could be made out; this was tied in two places and cut off with scissors. The tumour, when opened, contained half a pint of a thick albuminous fluid, with one part a little thicker than the rest. Its wall was found one-eighth to a quarter of an inch thick. The patient made a good recovery. There had been for some years trouble with the bowels, in the shape of constipation, but nothing to excite suspicion of any tumour.

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[1] Lancet, Oct. 18, 1883.

The symptoms and treatment of the common forms of rectal polypus may be gathered from the two following cases at St. Bartholomew's Hospital, treated by me in 1883:—

Case 74.—W. S., aged 21, stated that he had been suffering from piles for over a year, for which he had been treated at a hospital, but had received no benefit. He complained that he had occasional bleeding after stool, which sometimes was pretty free. He also said that a bit of his body "came down" at times, which he replaced by pressure from his finger. Occasionally there was a slight mucoid discharge, and he sometimes felt after a motion as if the bowels were not completely relieved. He suffered no pain, but had a sensation of discomfort in the part. On examination the anus appeared quite normal, but upon telling him to bear down, a slight ring of hæmorrhoids became visible, but not more than is frequently seen in a healthy rectum.

Upon introducing the finger there was no pain, and the mucous membrane felt smooth and healthy, and nothing abnormal could be distinguished.

I could not, however, make a satisfactory examination, owing to the bowel not being empty of fæces, so I prescribed a purgative, and told the patient to come again the next day. Upon making the second examination, I could not immediately detect anything abnormal, but on directing the patient to strain down, and on pressing the finger upwards to its full extent, I could detect what felt like a small cord running across the rectum.

By a little manipulation, I was able to hook my finger round this, and draw it downwards. I was thus able to extrude the polypus from the rectum. The stalk upon which it was situated was quite three inches in length, having a uniform thickness of a No. 6 catheter. At the head of this was a soft polypus the size of a small walnut. The pedicle appeared to be attached to the lateral wall of the rectum, two and a half inches from the orifice. I passed a silk ligature round the stalk, and tied it as near its origin as possible, and then cut off the polypus beyond the ligature. The patient was, of course, completely relieved of his symptoms.

Case 75.—A boy, aged 9. In this instance I discovered an exactly similar growth, with even a longer pedicle than in the former case. With the aid of Mr. Harding, our house-surgeon, without trouble I drew the head of the polypus out of the anus, and was about to apply a ligature to its pedicle. Owing, however, to a movement of the boy, who was not under an anæsthetic, the head of the polypus was suddenly dragged off before the ligature could be applied, the unligatured pedicle slipping up into the rectum. I could not again find it with the finger. The hæmorrhage, however, was but slight, and consequently no trouble arose.

I can readily understand that some troublesome hæmorrhage might follow the sudden breaking away of one of these polypi, for there is often a vessel of some size running up the stalk. I strongly advise, therefore, that even so small a procedure as ligaturing the pedicle of a polypus should be done with the patient under an anæsthetic.

The sphincters should be dilated in the usual manner, then the polypus should be carefully and gently drawn downwards, and the ligature leisurely tied as close to the base of the pedicle as possible.

Polypi, when widely disseminated, cannot of course be removed by operation. Nevertheless, some benefit can be obtained by removing those within reach, for it appears that either from protrusion at stool, or injury from the passage of fæces, that the lower polypi are the chief source of the bleeding. In Case 68, the bleeding was for a while remedied by the removal of the more prominent growths. I do not think that an unfavourable prognosis should be given in these cases, for in Case 69, occasionally one of the growths was spontaneously exfoliated, and it is possible, as occurs in papillomata of the skin (warts), that the tendency to recurrence might in time disappear.

CHAPTER XIII.

VILLOUS TUMOUR OF THE RECTUM.

These growths stand on the boundary line between the innocent polypus and the malignant cylindroma, differing from the former in having a far shorter and broader pedicle, and from the latter by their growing as free tumours into the cavity of the bowel, and not spreading along the submucous tissue. Their clinical features are usually those of an innocent growth, though cases are recorded in which after a while they cease to be so, having a tendency to spread into the deeper tissues, eventually developing all the characteristics of a malignant adenoid growth.

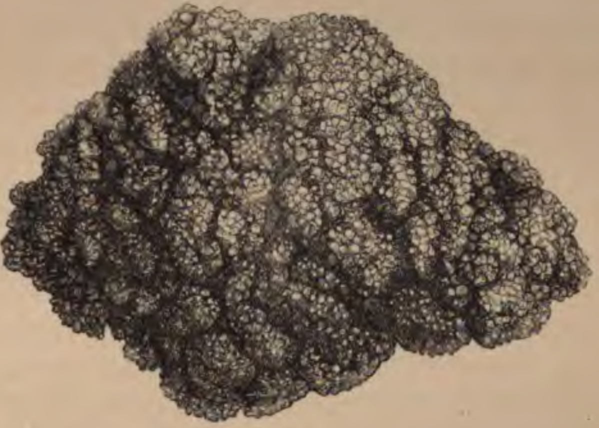
The villous tumour differs from the ordinary polypus rather in size than in structure, for the latter is always small, while the former may form a growth of considerable extent. The pedicle, too, is much less clearly marked, for the growth springs from a considerable area of mucous membrane, and has a short thick attachment to the surface of the bowel.

Microscopically, the structure of these growths is identical with that of the adenoid polypus—that is to say, it is composed of gland tissue such as is fully described in Chapter XIV.

The disease is rare, and I can remember but three instances which I have examined during life. The first case was under the care of Mr. Gowland, the eminent surgeon of St. Mark's Hospital, who kindly afforded me an opportunity of examining the tumour both before and after removal.

Case 76.—The patient was a woman, aged 60. She had noticed the tumour for twelve years, but during the last year it had greatly increased in size. Each time she went to stool the growth protruded, and latterly she lost considerable quantities of blood, and had become very anæmic. The tumour was not particularly painful, but a constant source of annoyance. There was a great deal of mucous discharge, causing the linen to stick together. The growth, the size of an orange, was of a dark red colour, soft, and covered with a transparent slimy mucus. Upon close examination it was seen to be lobulated in a very distinct manner, looking like a salivary gland. The main branches or lobules were fifteen or sixteen in number, upon these, again, the smaller nodules were crowded together, giving it a mulberry-like appearance. The tumour had an indistinct pedicle, which grew from a considerable surface of mucous membrane. When the tumour was dragged upon, the pedicle was well-marked. This was caused by the exceeding mobility of the mucous membrane. The base of the tumour moved freely with the mucous membrane, and was not fixed to the subjacent tissues. In this it showed a marked distinction from ordinary malignant ademoma. Mr. Gowland removed this tumour by dilating the sphincter,

FIG. 19.



VILLOUS TUMOUR OF THE RECTUM.

The specimen measures about eight inches in circumference, and was removed during life; it was growing from the posterior wall four inches from the anus by a broad base.—From a specimen in St. Bartholomew's Hospital Museum.

To face page 284.

then forcibly drawing the growth downwards, and strangulating its base in four portions by strong silk ligatures, the portions beyond the ligatures being cut off. The patient made a good recovery.

The second case was one which I assisted my colleague, Mr. Marsh, to remove at St. Bartholomew's Hospital.

Case 77.—The patient, an elderly man, had first noticed blood in his motions a year before admission; this continued, blood dripping away some minutes after a motion had passed. He also had a thin gluey discharge which stuck to his linen. Lately, he had complained that something protruded from the anus. On examination, opposite the prostate, on the anterior wall of the rectum, was a soft villous mass the size of a plover's egg, with a broad well-marked pedicle. The growth was removed by Mr. Marsh after ligaturing the base.

The third case was recently under my own care.[1]

Case 78.—A woman, aged 40, was sent to me by Dr. Godson. She stated that she had never felt anything wrong until six weeks before coming to the hospital, when for the first time she noticed a free watery discharge from the bowel, which has been very copious ever since. She had a sensation of the bowels not being completely relieved, but had no pain at all; nor had there been any discharge of blood. On admission, the patient was a well-nourished, healthy-looking woman, but with an extremely nervous, suspicious manner. She adhered, however, very strongly to the fact of her having had no discharge of mucus from the bowel till its sudden onset at the time mentioned (an inaccurate observation, probably). Upon examination of the anterior wall of the rectum, about three inches from the orifice I felt a large growth. It projected into the rectum, was distinctly lobulated, and of moderate firmness. It had a peculiarly soft velvety feel on the surface. The extent of the growth could not be ascertained, as it extended beyond reach, but so far as could be judged, it was the size of the fist, and appeared to have a broad pedunculated base.

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[1] Sitwell Ward, St. Bartholomew's Hospital.

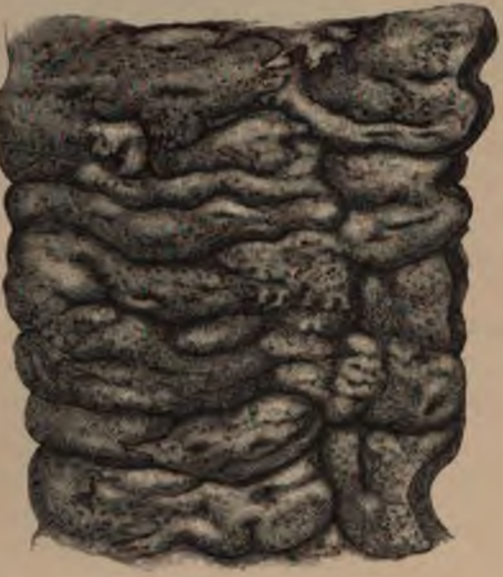
I proposed to remove the growth by ligature, but the patient obstinately refused to have any treatment whatever. The most prominent symptom during her stay in the hospital was the copious thin mucoid discharge, which, however, materially decreased after remaining in the recumbent position for a few days.

The general features of these tumours may be gathered from the foregoing description, from which it will be seen that they do not cause much pain, but sometimes give rise to troublesome hæmorrhage, and after a while are liable to protrusion in the act of defecation. But perhaps the most characteristic feature is the amount of sticky mucoid discharge which they cause from the anus.

Treatment.—This consists in their complete and free extirpation.

The patient being placed in the lithotomy position, the sphincter should be carefully but thoroughly dilated. The growth should be then seized either by the finger and thumb or by a vulsellum forceps, and drawn down as far as

FIG. 20.



VILLOUS CONDITION OF MUCOUS MEMBRANE.

From a colon in which the mucous membrane was extensively destroyed by ulceration; the remainder forms villous tufts, which thickly stud the surface, some in the form of velvety patches, others as long, branched, floccular processes; the lower part of one portion is free from ulceration, but here the entire mucous membrane is thickened and velvety as in woodcut. The patient was a man, aged 50, who died at the hospital February 20, 1855. In the preceding September he had a severe attack of cholera; he recovered from this, but died six months later with diarrhœa and bloody discharge.—From a Specimen in Middlesex Hospital Museum.

To face page 287.

possible. Although these growths are pedunculated, their attachment has usually a considerable area. By means of a blunt needle, armed with prepared twine, the base close to the mucous membrane is transfixed, and the needle withdrawn, leaving a double thread, the loop of which is divided, and the pedicle securely tied in two halves; the growth is then cut off by scissors, care being taken to leave sufficient material beyond the ligature to prevent it slipping. These tumours are very vascular, and any mishap in a ligature slipping may result in severe and troublesome hæmorrhage.

CHAPTER XIV.

CANCER OF THE RECTUM.[1]

Etiology.—There is no reason for supposing that cancer when situated in the rectum differs in its nature from the same disease in other parts of the body. It may be well, therefore, to take a brief glance at the general character of the disorder.

So much ambiguity has arisen as to the meaning of the word cancer, that I will define the sense in which the term is used in this chapter. The modern school of pathologists limit the term to express a group of tumours presenting certain definite structures under the microscope. In this group are included scirrhous, medullary, colloid, and epithelial growths, but the various forms of sarcoma are excluded. The older surgeons, on the other hand, consider the expression cancer as synonymous with the term malignant. It therefore included all varieties of growth that have a tendency to recur after removal, to infect neighbouring glands, or to become generally disseminated about the body. When the Council of the College of Surgeons set the subject for the Jacksonian Prize Essay for 1875, on "Cancer of the Rectum considered with the possibility of Cure by Extirpation," it was in the latter sense that the term was used. I shall, therefore, use the word cancer as equivalent to malignant growth.

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[1] The Jacksonian Prize Essay, Royal College of Surgeons, England, 1876; Revised, 1884.

The death-rate from cancer has shown a pretty steady relative increase during the whole period of which we have accurate returns. The following Table, compiled from the Registrar-General's Reports, shows the proportion of deaths from this disease, compared with those from other causes, during each of the thirty years from 1851 to 1880:—

Table.

—	1861, 1 in 58	1871, 1 in 52
1851, 1 in 73	1862 „ 58	1872 „ 48
182 „ 72	1863 „ 62	1873 „ 46
1853 „ 72	1864 „ 60	1874 „ 47
1854 „ 73	1865 „ 60	1875 „ 47
1855 „ 69	1866 „ 59	1876 „ 44
1856 „ 64	1867 „ 54	1877 „ 42
1857 „ 69	1868 „ 53	1878 „ 43
1858 „ 68	1869 „ 52	1879 „ 42
1859 „ 64	1870 „ 52	1880 „ 40
1860 „ 60		

Or if we compare the death-rate with the number of persons living, it will be found that whereas in the ten years, from 1851 to 1860, it averaged annually one death from cancer in every 3,150 persons living, in the next ten years, 1861 to 1871, the proportion had increased to one in 2,570. The mortality from the disease varies widely in the different districts of England. Nor is it only in different parts of the country that this variation is marked, for even in the subdivisions of the metropolitan districts there is a considerable divergence in the rate of cancer mortality. For instance, in Marylebone, St. George's, Hanover Square, and West London, the rate is 80 in 100,000, while it is less than half this in St. Luke's, Bethnal Green, and Rotherhithe. In forming these tables, deaths amongst women have alone been included; for cancer is not only more than twice as frequent amongst females as it is amongst males, but the occupation of men in the London districts often takes them away from their homes for at least half the twenty-four hours, and would thus bring them under different influences from those to which they would be subject at home; while, on the other hand, women generally pass the greater portion of their day in the same locality.

Upon reflection, there are many causes which might invalidate the statistics showing this apparent increase in the cancer mortality, and amongst these, the most important is the progressive improvement in diagnosis, so that many deaths which are now properly assigned to cancer, would formerly have come under various symptomatic headings, such as "marasmus," "abdominal obstruction," "gout," &c. For instance, how many cases of cancer of the larynx, ovaries, or rectum were diagnosed thirty years ago? But, notwithstanding the wide margin that must be allowed for these cases, it is more than probable that there is an actual increase in the amount of cancer amongst the population.

Modern surgeons differ materially in their views as to the origin of cancer. The widest divergence in opinion lies between those who consider that the origin of the disease is to be sought in purely local causes, and those who deem that it is rather to be found in some deep-seated condition of the constitution. Those who consider that the constitution is in fault, believe that there is a condition of the body generally, which renders it liable to burst into cancer with some slight accidental irritation, or even without any apparent irritation at all. In fact, they consider that there is a predisposition or liability to the disease, found only in a certain proportion of human beings, and the tumour is looked upon as merely the expression of a previously morbid condition of the body in general, analogous to the sudden outbreak of inflammation in the joint of a gouty person, or the development of bony growths about the joints of a rheumatic sufferer. Dr. Payne[1] expresses the meaning of the word "constitutional" as a "lesion or change in which the general disposition of the body has a very large share, and the influence of external causes—injury, irritation, and so on, has a comparatively small share." As opposed to these views, those who think that the disease is purely local in its origin, contend that the tumour is due to some cause acting locally on a particular part, and that this is the starting-point of the cancer, there being no previous disposition of the body to the disease, but that it only becomes secondarily affected from this original centre.

Many facts and arguments have been brought forward to support either view of the origin of the disease. The chief arguments in favour of the constitutional origin are, firstly, the hereditary nature of cancer; secondly, its almost inevitable return after removal; thirdly, its production in certain persons as the result of injury.

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[1] Path. Soc. Trans., vol. xxv. p. 338.

The transmission of cancer by inheritance, or the particular condition of body liable to be attacked by the disease, has been taught from the earliest times, and is, perhaps, the strongest argument in favour of the constitutional view. Indeed, it cannot be regarded as other than certain proof that a tendency at least to the disease has been directly transmitted. Sir James Paget,[1] a high authority on the subject, goes so far as to state that "he is disposed to hold that it is not possible to conceive the origin of cancer, or any disease of the kind, except by inheritance." Instead of elaborating ingenious theories, such as the localists employ to get over the difficulties of inheritance, or the still more complicated excuses which the constitutionalists find for cancer skipping a generation or two, it may be well carefully to weigh the facts upon which the doctrine of inheritance is founded.

I have published elsewhere[2] a short paper on this subject, from which I give the following extract:—

"The hereditary nature of cancer is based upon evidence derived from the following sources:

"1st. That it is a matter of common notoriety that cancer runs in certain families.

"2nd. Evidence founded upon certain statistical facts.

"Now, in dealing with the former statement, such evidence is wholly inadmissible from a scientific point of view without the positive facts upon which it is based. General impressions are often the result of hasty generalization upon imperfect observations.

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[1] Path. Soc. Trans., vol. xxv. p. 317.

[2] St. Barth. Hosp. Reps. vol. xiv.

"From time to time isolated instances may occur of an amount of cancer in a particular family in excess of the average to be expected. Such, for instance, as the case narrated by Sir James Paget,[1] in which a lady died of cancer, two of her daughters died of cancer, and eight of her grandchildren; however, the number of her children and grandchildren who did not die of cancer is not mentioned.

"The rareness of such an instance is proved by finding that, out of nearly 300 cases of cancer at St. Bartholomew's Hospital, nothing in the least approaching this history is to be found.

"The evidence derived from statistics will now be examined.

"In an article by Mr. Baker[2] will be found a table of cases from the practice of Sir James Paget. Mr. Baker makes the statement that 22·4 per cent. of the cancerous patients were aware of one or more relatives with the same disease. He then gives a table of 103 cases in which one or more relatives were affected. These 103 cases representing only 22·4 of the total number of cases examined, the whole number of cases investigated must have been 460. In these 103 cases amongst the relatives are included aunts, uncles, cousins—first, second, and third—great-aunts, and a great-uncle. But since it is impossible to conceive how a man can inherit cancer from his uncles, aunts, or cousins, the necessity for excluding these is obvious. Further than this, the impossibility of knowing the number of these distant relatives, in order to form a table for comparison between a cancerous and a non-cancerous family, renders them useless for our present purpose.

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[1] Path. Soc. Trans., vol. xxv. p. 318.

[2] St. Barth. Hosp. Reps., vol. ii.

"This objection cannot apply to a man's parents or grandparents; two of the former and four of the latter must be the invariable amount. Now, it is not within the range of ordinary observation that an individual, especially of the hospital class, could even with approximate accuracy assign the cause of death in his four grandparents. The cause of death in the parents is, however, commonly known, especially if the deaths were from cancer. On these grounds, therefore, will be considered the relative frequency with which malignant disease is found in the direct offspring of a cancerous or non-cancerous parent.

"Referring to the 460 patients mentioned by Mr. Baker, these must have had 920 parents, unless brothers and sisters belonged to the same family. This was so in four instances; the number of parents will thus be reduced to 916. Amongst these 916 parents cancer occurred 30 times in the mother, 7 times in the father, or a total of 37 times.

"This gives 1 death from cancer in every 24·8 among the parents of cancerous patients.

"Two objections to these facts might well be raised:

"1st. That it is assumed that all the parents of the cancerous patients were dead; but this would not be the case, and that those still living might eventually die of cancer, thus swelling the cancer mortality.

"2nd. That they might have died of an unknown cancer.

"Now, the first objection must readily be admitted, but taking into consideration that in a vast majority of instances cancer is a disease of advanced middle life, it would be in only a small number of instances that the parents, if living, would eventually die of the disease.

"As a proof of this, it will be found that in the whole series of Sir James Paget's cases only three instances are recorded in which a parent has succumbed to cancer subsequent to an offspring dying of the same disease; this amounts to less than 1 per cent. in the whole number of cases. The objection that the disease might have been an unknown cause of death would apply equally to the Registrar-General's returns, to be presently alluded to.

"The figures given in Mr. Baker's table of Sir James Paget's cases will now be compared with those derived from the Register of St. Bartholomew's Hospital. From June 1869 (the first commencement of registration), till October 1878, 280[1] cases of cancer were under treatment in the female surgical wards. Of these 280 cases in 111 no family history of any kind is recorded; in the remaining 169 cases a special record is made as to the family history. In these 169 cases no cancer was known in the parents in 156 instances; in 11 cases either the father or mother had cancer; in 2 cases it was doubtful whether or not one of the parents had the disease, one of these being so doubtful that I have thought fit to exclude it. There will remain, then, 12 cases amongst 336 parents, or 1 case in 28."

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[1] **Cases entered in the hospital index under the head of "Cancer" are alone included.**

As Mr. Baker very properly observes, in speaking of Sir James Paget's cases, these statistics in themselves do not prove in any way the inheritance of cancer, and this question can only be finally answered by discovering the proportion of cancerous relatives belonging to those not cancerous, and comparing the two sets of figures.

What we have to do is to compare the death-rate from cancer in the parents of cancerous patients with the death-rate from cancer amongst adults generally. Fortunately, in the Registrar-General's returns we have a means of making this comparison.

It would not be right in this calculation simply to take the whole number of deaths in the community and find out how many of these deaths were due to cancer, for the parents of cancerous patients must certainly have been adults at the time of their deaths.

The total number of marriages below the age of 20 only amounts to 8 per cent., and the proportion of these who both become parents and die below the age of 20 is so small a percentage that it can be fairly ignored. Thus, then, we will compare the death-rate from cancer in the parents of cancer patients with the death-rate from the same disease in all persons in the kingdom dying above the age of 20 years.

In the ten years, 1861 to 1870, in England and Wales—

1,185,189 men died above the age of 20 years.
1,194,433 women died above the age of 20 years
24,845 men died of cancer.
56,854 women died of cancer.

The addition of these figures gives 81,699 deaths from cancer out of 2,379,622, or 1 death in every 29·1 from cancer.

By comparing these figures with the figures given in the previous page, the following result is arrived at:

Amongst the parents of cancerous patients the death-rate from cancer amounts—

According to Sir James Paget, to 1 in 24·8.
„ St. Bartholomew's Register, to 1 in 28.
Amongst the whole community over 20 years of age, according to the Registrar-General, to 1 in 29.

The relative frequency of cancer in these two sets of cases differs so slightly that this difference may well be looked upon as accidental, in which case the figures given in the paper bear proof that cancer in the parent does not increase the liability of the offspring to suffer from the same disease.

Statistics collected by other observers might lead to different conclusions. Every endeavour, however, has been made to make the foregoing figures accurate, and until more evidence is adduced than is now accessible to prove the inheritance of cancer, I do not feel justified in admitting the doctrine as evidence of the constitutional origin of the disease.

The Return after Removal.—This, not merely *in situ*, but disseminated about the body, has been regarded as evidence of the part played by the constitution in the production of the disease. In speaking of this argument, Sir James Paget states: "I would hold that the constitutional element in the origin of cancer is strongly marked in the constancy and in the method of its recurrence after operations—recurrence after complete excision. . . . . You may cut out little cancerous tubercles here and there from some old person three, four, five, or six times over, but that is a different disease. You cannot find an instance of rapidly growing, soft-textured, vascular cancer of any form which can be removed three, four, six, eight, ten, or twenty times without recurrence, not in the place of growth alone, but in distant organs; and I believe it is vain to attempt to explain this difference of the recurrence in distant and dissimilar parts which we find in recurrent tumours, or, occasionally, in the more ordinary kinds, upon any facts of difference of physical constitution. I observe it is referred to the mobility of cells, to their readiness to travel, that now and then these tumours pass from one part to the other. Now, really there are cancers that multiply themselves in dissimilar parts whose physical condition looks as unfit for travelling as any that could be named. If I could name any kind of cancer which propagates itself more widely and readily than another, it would be osteoid, a mass as hard as any mass of fibrous tissue you ever found in the uterus. I know no fibrous tumour which is so hard as the fibrous mass, to say nothing of the bony structure, of an osteoid cancer, yet it propagates itself speedily and everywhere. Ordinary scirrhous cancer of the breast is at least as hard as an ordinary fibrous tumour; but the one does what the other does not—propagate itself. The recurrent fibroid, or recurrent cartilaginous growths, are just as soft, and are composed of cells and free nuclei as little held together as in any of the soft forms of cancer. They do not, except in rare cases, propagate themselves. Cancers do not fail, except in rare cases, to propagate themselves, so that I must maintain that, whichever way we look at them, the facts of the method of propagation to distant and dissimilar parts are so strong, and so characteristic on the side of cancers, that we must assume an essential difference between them and any other tumours that we can name."

But yet this argument, when considered, amounts to no more than stating that there is a marked difference in the physical character of cancer and that of the innocent tumours, a fact readily admitted. If, however, it can be shown, as I will endeavour to show subsequently, that all the particles of the disease found disseminated about the body are the results of the primary tumour, and started from it, then, instead of the dissemination being an argument in favour of the part played by the constitution, it appears to point in an exactly opposite direction.

Cancer following an Injury.—In a certain number of instances the actual starting-point of cancerous growth appears to follow more or less directly an injury of the tissue, and this outbreak, known under the name of "traumatic malignancy," results from injury of a peculiar nature and in certain parts. The form of injury that apparently starts the disease is not an incised, lacerated, or punctured wound, but rather that form of injury known as "contusion," and this, too, often of a trivial nature. Again, the parts in which a malignant tumour follows a blow is generally glandular tissue, as shown by my notes of a case which was under the care of Mr. T. Smith, at St. Bartholomew's.[1]

In this case the constitutionalists would see evidence of a constitutional tendency excited to activity from the injury, for they would say, and probably with truth, that ninety-nine such blows might be struck on as many individuals without producing a similar result, and from this they would argue that there must be a second factor besides the blow to produce such an exceptional phenomenon, and in this factor they recognize a peculiar disposition in the constitution. If such an hypothesis be correct, it would seem that any blow struck on a patient with such a diathesis should be followed by tumour formation; but yet this is not the case, for wounds or contusions of innumerable kinds have, from time to time, occurred to persons who are actually suffering from cancer, yet, save in the rarest instance, no cancerous growth has resulted, unless the injury has occurred in the immediate neighbourhood of a primary disease. The late Mr. De Morgan narrates a case[2] which admirably illustrates this fact.

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[1] Case 79.—E. R., police constable, in June 1878, while arresting a prisoner, received a kick on the left breast; it was not very severe but caused him some pain at the time, and did not prevent his being on duty the following day. Twenty-four hours after the injury there was a bruise the size of a florin around the nipple. The marks of this remained for some weeks and then disappeared. Ten weeks afterwards he noticed for the first time some hardness round the nipple, about the size of a small marble. He treated this by fomentations and poultices, but it continued steadily to increase. On entering the hospital, rather more than a year after first noticing the growth, there was a large projecting tumour, the size of a fœtal head; the skin over it was dusky in colour and firmly adherent, while in the axilla were two large glands the size of walnuts. He was a strong burly man, no family history of cancer, and had got rather stouter than thinner during the last six months, since he had been off duty. The tumour was malignant.

[2] Case 80.—A man was brought into the hospital with a compound fracture

Now, I will readily admit that, seeing the exceptional nature of the police constable's case, there must have been some condition in addition to the mere blow to produce so untoward a result; but what I do deny is, that it is necessary to assume that the additional factor should lie in the patient's constitution at large, rather than in some local condition excited to activity by the injury to the tissue.

Having mentioned some of the chief arguments used by the constitutionalists to support their view of the origin of the disease, I will glance at those features which appear to me to supply the strongest evidence of its local origin, the constitution only becoming secondarily tainted.

First amongst these we have the evidence of the tumour itself, a single spot being alone affected, the rest of the body being in perfect health. In fact, the first indication of the disease is its local manifesta-

of the radius, which had occurred four or five days previously. The whole arm was enormously swollen and in a condition of what may be called putrescent cellulitis. There was putrid pus and serum distending the cellular tissue up to the middle of the arm. The general appearance of the man, notwithstanding this, was regularly healthy. His pulse was 84, he had a clean tongue, and ate and slept well. I contented myself by making incisions, expecting that amputation might soon be necessary; by-and-by the carpal bones and the head of the radius became carious, many of the former were removed, the head of the ulna exfoliated. There was copious suppuration, at first foul but afterwards becoming healthy. During all this time, a period of a couple of months, he retained his health, eating, drinking, and sleeping well, with a good colour and slow pulse. I determined to let Nature have her course. All at once he was seized with peritonitis. I feared it was pyæmic peritonitis, and that I had carried the experiment too far. He died, and it was found that the peritonitis was due to a portion of the gut having got entangled in a band, the result of a peritonitis which he had told us he had previously suffered from. But in addition to this there was found in the pelvis and lower part of the abdomen a mass of colloid cancer, while the omentum and intestines were throughout studded with nodules of the disease of various sizes. There was no sign of cancer about the injured arm.—*Path. Soc. Trans.*, vol. xxv. p. 391.

tion. As an instance, I will take a case[1] which was under my care at the Royal Free Hospital, as being fairly representative of what is commonly observed.

When the patient was first seen her health was good, but anxiety of mind, sleepless nights, and pain, soon told their tale, and accounted for the so-called cachexia. After the removal of the local disease she regained to a great extent her former health, only to be lost when the disease returned. Such a history is common in cancer, all the constitutional symptoms being consecutive to the tumour.

Secondly, the manner in which cancer spreads and propagates itself. There are four methods by which the disease extends. Three of these methods of extension are as clearly recognized, and as universally allowed as any fact in pathology—viz., growth from the periphery, extension by the lymphatics, and dissemination in the course of the blood-stream.

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[1] Case 81.—A woman, aged 45, had enjoyed thoroughly good health since she was a child. A few months ago she began to feel slight discomfort in the right breast. This came on so gradually that she could fix no exact date for its commencement. A week ago she noticed for the first time a hardness in part of the right breast. She is still in perfect health and has no pain to speak of. On examination a hard nodule is felt deep in the breast, but no perceptible glandular enlargement. An operation was advised but declined. She again applied to the hospital four months later; her condition was then much altered, the tumour was larger and very painful, and in the axilla was a gland as large as a pigeon's egg; she had lost appetite and her nights were often sleepless. She had quite lost her good looks and complexion, her face being thin and careworn; she was very considerably thinner. Being very anxious for an operation the breast was completely removed, together with the axillary gland; the wound healed rapidly. She left the hospital in good spirits, and during the next few months she regained her appetite and once more looked fairly healthy; unfortunately six months after the operation the disease returned *in situ*, she became rapidly cachectic, and, I believe, died eight months later.

The fourth method is by auto-inoculation, but notwithstanding the utmost importance that should be attached to this method of extension, it is practically ignored by the majority of authors on the subject, although it has not escaped the observation of such accurate pathologists as Dr. Moxon, Dr. Goodhart, and the late Mr. De Morgan. Many museums afford specimens of malignant ulceration of the stomach with patches of cancer scattered here and there along the small intestines and colon. The appearance of these specimens combined with their clinical history leaves little doubt but that these deposits were secondary to the gastric disease. In the Middlesex museum is a cancerous ulcer in the stomach of a boy who had previously suffered from the same disease in the mouth. In the Pathological Society's Transactions it will be found recorded, and specimens have been exhibited showing how the uterus has become inoculated with cancer through the Fallopian tubes from a diseased ovary, how the lungs and bronchi have become infected from a primary cancer of the larynx, and how the skin of the abdomen has become cancerous from contact with a pendulous breast already diseased.

I have myself recorded [1] a very remarkable case (82) of this auto-inoculation. The patient was a woman in St. Bartholomew's Hospital, who had a cancerous ulceration involving the breast and skin of the thorax. For two months, being unable to put on any dress, she had kept her arm bent at right angles in constant contact with the disease: the result of this contact being that the skin in the neighbourhood of the elbow became the seat of a cancerous ulcer several inches in diameter.

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[1] Path. Trans., vol. ii. 1881.

As regards these four methods of extension, the first and last—viz., growths from the periphery from auto-inoculation—afford positive evidence of extension by direct local infection, while the manner of extension by the lymphatic glands, and of dissemination about the body, leaves little question that the secondary points of disease are propagated from the primary tumour. The parts in which these secondary deposits first appear are almost invariably structures in direct communication with the primary growths, by means of the lymphatics and blood-vessels; thus, for instance, the glands of the axilla are first affected in cancer of the breast, the submaxillary in cancer of the tongue, and the liver-substance after disease of the intestine. Moreover, when it is remembered that one of the functions of both lymphatic glands and liver is to act the part of a filter—the one to the lymph, the other to the blood—it would be expected that these would be the organs in which morbid material would first become arrested. But after a while, the glands and the liver becoming disorganized, they are no longer able to filter out the obnoxious particles, and thus, eventually, general dissemination occurs by the blood-stream.

The whole course and progress of these secondary growths can at times be as clearly traced from the primary tumour as can the abscesses of pyæmia from the original scratch on the finger.[1]

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[1] Case 83.—A patient, a healthy woman, aged 27, had upon her right leg a small dark-coloured mole which had been there since her birth. A year

When we see the manner in which malignant disease spreads, it is impossible not to be struck with the close analogy it bears to any poison introduced into the body locally, such, for instance, as the poison of septicæmia, glanders, or syphilis. The constitutionalists, admitting the extension of cancer by the channels mentioned, see in it only another proof of a "predisposition;" they say that a something is absorbed that irritates a gland, and this irritation, instead of subsiding or going on to the formation of an abscess as it would in an ordinary case, excites the formation of cancer owing to the predisposition to that disease inherent in the patient. Sir W. Jenner expresses this by saying that[1] "something is absorbed, it is not necessarily pus, there is a disposition in every part to burst forth into cancer, when an exciting cause is applied; something is absorbed from the part which irritates a gland, and in the constitutional state of the patient, cancer is produced instead of abscess or extravasation of blood, or thickening of a tissue. Whether it goes by the lymphatics or the veins is a matter of insignificance; it would not develop into cancer unless you had a

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previous to admission into the hospital a small warty excrescence appeared on one part of the mole. This she treated with caustic, which in a few days was followed by some tenderness of the groin below Poupart's ligament. In the course of a few weeks a tumour made its appearance in the groin, at first no larger than a nut; other swellings soon appeared both above and below Poupart's ligament, and also in the popliteal space. Each of these soon developed into well-marked tumours. After the lapse of nine months from the first application of caustic, tumours had appeared over the clavicle, sternum, and abdomen, while there were obvious symptoms of tumours in many internal organs. She was removed by her husband from the hospital in a dying state, eleven months after the application of the caustic. No opportunity was afforded for a post-mortem examination.—Sitwell Ward Register, St. Barth.'s, vol. vi. (Notes by T. Butlin and Author.)

[1] Path. Soc. Trans., vol. xxv.

primary condition in the patient—viz., a disposition under irritation to form cancer."

Yet it would seem to me as reasonable to hold that the disseminated abscesses of pyæmia or the tertiary gumma in syphilis, were due to predisposition in the constitution of certain individuals to form such masses "under irritation." But no one for a moment doubts that the characters of the secondary effects of pyæmia and syphilis are stamped not by the constitution of the patient, but by the specific nature of the original poison.

Again, if further proof of the direct relationship of the secondary deposit to the primary tumour were necessary, it is afforded by microscopic examination from such deposits, for the peculiarities of their structure often admit of their being identified as starting from the primary tumour. If, for instance, the primary tumour have cartilaginous nodules in its substance, portions of cartilage may frequently be found in the secondary deposits, while in cancer of the liver, secondary to the same disease in the rectum, not only can the large epithelial cells of the rectum be recognized, but they actually attempt to develop into an adenoid growth, having all the characteristics of Lieberkühn's follicles.

Certain local applications have the undoubted property of exciting malignant growth, the example of this is to be found in chimney-sweep's cancer of the scrotum.

It can scarcely be contended that sweeps have a special constitutional tendency to cancer. It must, therefore, be acknowledged that it is due to an irritant locally applied. The question would further arise as to whether this cancer of the scrotum is caused by any specific irritation inherent to soot, or whether any irritation constantly applied to the skin of the scrotum will produce similar results. Now, seeing that there are many forms of manual labour by which the parts in question are kept constantly irritated by dirt, yet the impunity from cancer in these circumstances points rather to some specific irritation due to soot; possibly the exceeding fineness of the particles may afford an explanation, but I will not venture at present to speculate on this matter. The fact, however, and that too of the greatest importance, remains, that a local irritant can produce what is at first certainly a true local disease. In this form of cancer the commencement of the disease is almost obvious, its gradual progress can be traced until neighbouring glands become implicated, and the patient ultimately dies of the disease. It is too in this class of case that the sufferer, being aware of the nature of his malady, applies for advice at an early stage, and the surgeon operates with a fair hope that the cure may be permanent.

When there is such positive evidence that the disease is local in a particular case, and when there is no proof that it is due to a constitutional origin, it is more logical to assume that the disease always has a local though unknown cause than to regard as of an exceptional nature the cases in which local origin is obvious.

Taking into consideration the points in the history of cancer upon which we have already touched, it would seem that the preponderance of evidence is strongly in favour of the view that the origin of cancer lies in some local condition of the part attacked. With a view to ascertain the cause of the disease, it is natural that pathologists should have paid considerable attention to the structure of the growth itself; but yet, in studying the histology of the tumour, we are rather examining the product of the disease than investigating its cause. What the surgeon removes, and the microscopist cuts into sections, cannot be the cancer, that is to say, the whole cancer, seems pretty evident by the disease remaining in the patient and ultimately causing his death. What has been removed consists of a mass of hypertrophied tissue and cellular element formed as the result of a disease, portions of which have most certainly been left behind. No doubt that part which appeared to be acting most violently had been removed with the tumour, but what remained behind only required time to increase and to become as active as the part already removed.

The careful study of the tumour itself by the microscope has in a way greatly increased our knowledge of the disease, and supplied us with a vast amount of valuable facts; but yet I doubt whether, by the study of the tumour alone, the true cause of its growth will be eventually established; certainly, if for our knowledge of pyæmia we had been dependent upon the microscopic examination of the secondary abscess, we should never have attained to the knowledge which is now so successfully employed in guarding against the disease.

If the tumour be cut into sections and examined, it will be found that there is nothing mysterious in the elements of which it is composed. The cells which represent the growing part of its structure are similar to those naturally existing in the part affected, and moreover often have a tendency to form themselves into glandular tissue, with a structure more or less in imitation of the healthy glands in the immediate neighbourhood. The source from which the cells forming the tumour are derived would seem to be almost certainly the pre-existing cells of the part, and are the result of a proliferation of the lymphoid and epithelial cells previously existing in the healthy tissue. Since it is the accumulation of these cells that forms the tumour, it is to the cause of this accumulation that attention should be directed. In searching for this we will briefly consider what causes are already known as leading to unnatural cell aggregation of these.

Simple mechanical irritation, such as results from friction or intermittent pressure, will lead to cell growth; and of this we have a typical example in the formation of corns and bunions.

Again, the presence of a foreign body in the tissue will lead to a local hyperplasia, such as is seen in the hypertrophy of bone, when a sequestrum long remains enclosed in its cavity.

Lymphatic obstruction is considered by some to be a cause of cell overgrowth.[1]

Another group of causes is to be sought in certain specific inoculations; for instance, vaccine lymph will in a few days lead to an extensive effusion of leucocytes. Here the manifestation is local, so far as the cell collection is concerned. In the same category may be included the poison in pyæmia; but this not only produces a primary abscess (cell collection), but also by means of the lymph and blood channels will cause secondary formations of pus wherever arrested. Other instances, such as inoculation in small-pox, might be cited, but sufficient have been mentioned for purposes of illustration. Such causes, moreover, act more or less acutely, and the cellular product takes the form of pus, being formed too quickly to become organized into fixed tissue.

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[1] Holmes's System of Surgery, 3rd edition, vol. iii. p. 579.

Such an accumulation is like a quickly collected, unorganized mob, the individuals of which act independently. In the haste of their collection the commissariat has been neglected. The capillary blood-vessels, which should supply the lymphoid cells with food, have had no time for development. The collected cells are consequently short-lived, and soon become little more than dead refuse. Regarding pyæmia and small-pox then as examples of rapid cell effusion from a specific cause, we will pass on to some specific poison, which both locally and secondarily will produce a cell formation, having sufficient vitality and blood supply to allow of its formation into cohesive tissue. In this we have an admirable example in syphilis.

In descending the scale of creation we find the vegetable kingdom rich in examples of cell formation due to specific irritation. Those who have studied the formation of galls, will know how these bodies are produced by such irritants.[1]

Here we have a tumour formation, the individual cells of which are derived from the bark or leaf on which it is placed, and can be easily identified with the cells of the neighbouring normal tissue; but yet it is established beyond doubt that this extraordinary behaviour of a portion of a tree is the result of a specific irritation, which in the case of the oak-tree is an insect (the *Sineps quercus folii*).

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[1] Sections of Galls, Path. Soc. Trans., London, vol. xxxv. (Paper by Author.

In considering whether any of the causes just mentioned bear upon the question of malignant tumour, the "mechanical irritation" will first come under consideration. It has frequently been sought to prove that mechanical irritation is the source of cancer, but as yet with entirely negative results.

Patients with cancerous ulcerations on the lips or tongue are invariably questioned as to smoking, or as to the existence of broken teeth. Affirmative replies are considered evidence of a connection between the irritatives and the morbid growths. If these relations be regarded as cause and effect, why should the cause be at work in 1,000 cases, the effect following in one only? Instead, therefore, of such irritations being the cause of morbid growths, we have overwhelming evidence that they are not so save in the rarest instances.

Without denying the connection that occasionally exists between injuries and malignant growths, it is evident that the determining cause must lie in some factor beyond mere irritation, and, as already mentioned, the constitutionalists with unscientific vagueness regard this factor as a "constitutional predisposition," so that instead of the irritated part producing a simple hypertrophy or abscess, a malignant tumour results.

Simple mechanical lymphatic obstruction might account for the formation of a local tumour, the cells formed in a given part being unable to pass away, but such obstruction must either lie between the tumour and the nearest glands, or beyond the glands. In the former case the glands could never become diseased, in the latter it should be the primary seat; both of which are contrary to fact.

Lastly, we will consider specific infections as a cause for cell accumulation, and herein we find an analogy closely resembling what is seen in malignant disease. The poison of small-pox or glanders not only produces the cell accumulation at the seat of the inoculation, but passing by the lymphatics and blood-stream causes secondary accumulations in various parts of the body. Syphilis runs a similar course, merely differing from its action being slower. In these instances the medium by which the poison travels from the seat of inoculation is not determined; it may be that the germs (Bacteriæ) are simply washed along the channels, or they may be carried along in the interior of the leucocytes coming from the infected part.

In cancer, however, we can go further, and can prove almost certainly that the infection, whatever its nature, is carried by, or resides in, cells derived from the neighbourhood of the original disease. It is found, for instance, that the secondary deposits in the liver when following rectal disease, cannot merely be identified as consisting of the columnar cells of the rectum, but that they actually in the liver grow into a gland tissue identical with Lieberkühn's follicles of the rectum.

Accepting it then as a fact that the secondary deposits found in the liver after rectal cancer are formed from cells originally derived from the rectum, what a field for inquiry is immediately opened. Is it to be supposed that it is only in disease that cells derived from the intestinal glands find their way to the liver ? or is it but part of a normal physiological process that cells should thus migrate ? This question is more fully considered on page 16, and, as the result of the microscopic examinations there described, I venture to suggest that each of the epithelial cells of the intestine represents an individual life ; requires nourishment, grows, and multiplies by the division of its nucleus, which nuclei from time to time find their way into the subjacent retiform tissue, pass hence through the lymphatics to the blood-stream, where they become identical with the leucocytes. Should this view be correct, or even partially so, we have a solution to the surprise that is first experienced on recognizing a structure peculiar to the rectum transplanted to the liver.

Such cells, unable from their altered form, due to a diseased condition, to pass readily along the usual channels, collect first in the submucous tissue, and subsequently in the liver or lymphatics, thus producing tumours, while at the same time it is more than probable that they may infect the cell elements of the part in which they are arrested. Let us for a moment compare this theory with the interpretation of facts suggested in the study of primary rectal growth. Lymphoid cells, offspring of the glandular epithelium of the intestine, are born with the disease. The function of such embryonic cells, if healthy, would have been to have passed through the lymph channels into the blood, and there to have circulated until required by some particular portion needing their assistance for repair, but owing to their alteration by disease they not only have great difficulty in passing along the lymph paths, but when they succeed in doing so have a tendency again to become arrested in the fine structures of the glands. In the first instance their undue sojourn in the lymphatics in the immediate neighbourhood of their birthplace gives them time to develop into the more perfect type of cell, or even to a tissue similar to that formed by their parents, and the same development taking place when arrested in distant parts causes the formation of secondary growths.

The nature of the irritant infecting the cells is unknown, but seeing the increased prevalence of malignant disease in certain districts, it would appear to be from some cause originating external to the body, and to have a special affinity for certain structures, such as gland tissue, in the same way as particular galls only infect the leaves, bark, or root of the plant, according to their special variety.

The undoubted starting-point of malignant growths, especially in glandular structures, can from time to time be directly traced to some blow or injury, yet, as a rule, thousands of such blows or injuries may occur without being followed by any such result. But we can study an almost analogous process in the acute necrosis affecting the bones of children.

Hundreds of slight contusions of the periosteum may occur without producing acute pyæmic necrosis, but yet the starting-point of this grave disease can at times be clearly traced to such an accident. If the product of one of these acute abscesses be examined it will be found crowded with organisms, notwithstanding that no communication with the air previously existed.

Such a phenomenon can, I think, only be explained upon one hypothesis—viz., that such organisms, by absorption, find their way into the blood, and whilst still circulating within the healthy tissue are incapable of multiplying or doing harm, but when in damaged tissue they become stationary by extravasation as the result of a blow, they immediately become active, and produce the phenomenon of subperiosteal abscess or pyæmia.[1]

In cancer no parasite has been discovered by the microscope, but this is no evidence whatever of its non-existence, for it must be borne in mind that it is only within the last few years that even the larger microscopic organisms have been detected, and some of these would never have been suspected had not their movements attracted attention in recent specimens. The myriads of minute specks of granular material seen by the microscope when examining a section of malignant disease might contain any amount of organisms which, at present, are incapable of recognition.

If cancer could be propagated from one person to another it would support the view that one of its causes may lie in some specific contagion. Hitherto, all direct experiments with a view to inoculation have failed; but yet when we read the accounts of these experiments, they merely prove that when a portion of a tumour, or of its secretion, is inserted *beneath* the skin of an animal the results are negative. If portions of the disease could be kept sufficiently long in contact with an *epithelial* structure, there is reason to suppose that inoculation would take place. Such an experiment is occasionally carried out by Nature, as in the instance narrated on page 303. The fact that when sound epithelial tissue is kept in constant contact with malignant disease, it becomes infected, lends no small support to the view that the poison in at least some cases of cancer may prove to be of a parasitic nature.

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[1] Some time after advancing the above theory as to the cause of pyæmic abscesses occasionally following blows, the view has been confirmed by actual experiment. —— performed the following experiment. Healthy dogs were fed on the flesh of animals dying from septicæmia with no apparent deleterious effect. The periosteum in some of these animals was subjected to contusion without any skin wound being made. Abscesses of a pyæmic nature rapidly developed at the site of injury, the animal dying subsequently of general septicæmia, the original abscess being crowded with bacteriæ.

I now pass away with some satisfaction from the unsafe region of theory; for I feel that this problem of cancer is not to be solved by speculation on ill-considered hypotheses. Physicians from the earliest dawn of medical science have been busied in speculating on this problem, and yet have scarcely advanced a step in its solution. In recent years some progress has been made in our knowledge of the structure of the tumour, but such knowledge has only been arrived at by the aid of microscopic examination. If knowledge of the disease is to advance it will be by the continuation of this process of investigation, aided by clinical observations and accurate experimental research. With this view, in the following pages I will give the results as briefly as possible of the histological characters of malignant growth as found in the rectum. The observations made are fragmentary and imperfect, but I venture to give them in order to compare notes with other workers in the same field.

Pathology.—Malignant disease of the rectum has enjoyed its full share of classification. Its nature has been described under the heads of scirrhous, medullary, and epithelial cancers, sarcomas, round and spindle-celled, myxomas, adenomas, &c.; while the innocent tumours have been described as villous growths, papillomata, and polypi.

The older writers founded a simple classification, according to their clinical experience, of these growths, and were content with two varieties—cancer (malignant growth) and the villous tumour (an innocent formation). This classification into simple or malignant growths is of considerable clinical value, but it assumes too much, and draws too hard a line between the two varieties of tumour. For notwithstanding that, in a large number of cases, the future of the disease can be certainly predicted, there remain a certain number of growths whose malignancy is of such a modified type that it is impossible accurately to forecast their future behaviour. They form, as it were, the connecting link between the malignant and innocent disease, but yet are not provided for in that nomenclature.

Recent attempts to define these growths according to their minute anatomical structure is certainly more scientific, and if only accurate would form no cause of complaint. In the rectum, however, to which the present observations are confined, I have failed to discover any growths or tumours consisting entirely of the characteristic structure which pathologists designate as scirrhous or medullary cancers, or as belonging to the different varieties of sarcoma. Considering the eminence of many careful observers who have applied such names to these growths, it would be quite unjustifiable to assume that such distinctive structures never form the entire bulk of the tumour; but I feel bound to state that with, perhaps, a more than average opportunity of examining such growths from the rectum, I have been unable myself to discover tumours composed entirely of the distinctive features appertaining to these diseases.

It must not be supposed that all these growths have a similar structure. On the contrary, it is seldom that any two accurately correspond in their construction, but such differences as exist depend rather upon the details of the growth than on any difference in the general plan on which it is formed. The length of time that the tumour has existed, the particular tunic which it has invaded, or the portion of growth from which the section has been cut, are sufficient to account for the varying appearances obtained by the microscope without the assumption that different types of the disease exist. For instance, I have seen growths which, while confined to the mucous membrane, displayed the most typical microscopic characteristics of adenoid or cylindrical cancer, yet when they had spread to the skin of the anal margin, they gradually and imperceptibly changed their characters into perfect examples of epithelioma as it ordinarily affects the skin (see

Plate XIII). It not uncommonly occurs that the particular features supposed to be characteristic of each type may be observed in the several portions of the same specimen, or that a tumour which, on its original removal, presented one variety, will on its recurrence present another.

Excluding the form of cancer known as colloid, as to the nature of which I am not altogether satisfied, it will be found that there is one characteristic structure common to almost all morbid growths in the rectum. This structure consists of gland tissue similar to Lieberkühn's follicles. By careful examination this tissue can be demonstrated in almost every specimen, but yet now and again search fails to disclose this gland tissue. These exceptional specimens usually present dense fibrous tissue, with only a small amount of cell element; but a considerable amount of such structure is always found in the older parts of typical glandular growths, where it can be demonstrated to be in direct continuity with, and to be formed from, the adenoid tissue. It is probable, therefore, that in the exceptional specimens either glandular growth existed in other portions of the specimen, but escaped detection, or that it had been present in an earlier stage of the growth, but had passed away before the specimen came under examination.

If these growths are to be named according to their anatomical structure, the term adenoid will appear to be the most applicable.

Such expressions as malignant, semi-malignant, or simple adenoid, would, moreover, be sufficiently distinctive for surgical purposes, and at least have the merit of being in accordance with clinical and histological observation.

It is generally easy for a surgeon of experience to determine, as the result of clinical observation, whether a growth in the rectum be of an innocent or of a malignant nature. Occasionally, however, the characters of the disease are not sufficiently marked to admit of a positive prognosis. The quickly growing tumours, or those which have deeply eaten into the surrounding texture, are almost certainly malignant, while the more slowly developed growths projecting into the rectum, without extending into the deeper tissues, are generally innocent.

Growths will be found occupying, as it were, a position in regard to their clinical features midway between the extremes mentioned. Such growths admit only of approximate prognosis, as their features tend more or less in the direction of the innocent or malignant type.

Seeing thus, that from clinical observation it is possible to speak with considerable certainty as to the future of rectal growths, the question naturally arises whether the anatomical structure when examined by the microscope presents any constant appearances by which a malignant may be distinguished from an innocent tumour.

Although, as before stated, these growths are all constructed upon the plan of glandular tissue, yet I have no hesitation in affirming that it is generally possible to find appearances presented under the microscope by which the innocent or malignant nature of the growth can be established. However, just as in clinical observation so under the microscope, there will still remain specimens in which the structure presented lacks the distinctive feature common to both of the pronounced types.

In commencing a description of these growths it may be well briefly to call attention to the typical appearance both of an innocent and malignant specimen without attempting to describe intermediate links.

The innocent growth forms a soft tumour projecting into the cavity of the bowel. It sometimes has a fairly marked pedicle, especially if the growth has existed any length of time, but this pedunculated appearance is generally produced by the mass being constantly dragged upon during efforts of defecation, and thus drawing down the healthy mucous membrane around the base of the growth so as to produce the appearance described. These growths have already been described in the chapters on Polypus and Villous Tumour.

The malignant growths present two well-marked varieties, the chief characteristic of the one being its tendency to spread as a thin layer between the mucous and muscular coats of the bowel, while that of the other is to increase more uniformly in all directions, thus producing a distinct tumour.

The laminar form of disease is the commoner, and when well marked exists as a thin layer of adenoid growth spreading in a horizontal plane between the mucous and muscular coats. The thickness of the growth is often not more than a quarter of an inch, while its area may extend over several square inches. At an early stage it feels like a flat foreign body between the mucous and muscular coats, slightly more raised at the centre than towards the circumference.

The mucous membrane is firmly attached to the subjacent growth, while this in its turn is adherent to the muscular coat; it appears, in fact, as if the inter-fibrous bands naturally running from one coat to the other, had been rendered tight by the deposit of new growth between the fibres. The diseased portion of bowel is, as a whole, at first fairly movable upon the surrounding structures.

As the layer of the disease spreads it is not always in a regular manner; it usually extends more rapidly laterally than in the direction of the long axis of the bowel, a course which corresponds somewhat with the distribution of the nerves and vessels of the part. The result of this lateral extension is often seen by the whole circumference of the bowel being affected, while the width of the ring of disease is less than an inch. It is this form of disease which constitutes the annular malignant stricture so common in the large intestine, and most pathological museums afford specimens of this annular form of cancer.[1]

The deposit having existed a certain length of time, ulceration of the mucous membrane over its centre takes place, and the membrane is generally slowly destroyed from the centre towards the circumference. Sometimes the ulceration of the mucous membrane commences at many points at once, so as to give it a honeycombed appearance, and the growth can be seen projecting through these holes in the mucous membrane (see fig. p. 325), but this is not common. After a while, instead of the centre of the growth being its most prominent part, it becomes excavated and depressed by the ulcerative action that commences in the mucous covering and extends to the disease, which in its turn becomes eaten away. At first the base of the ulcer will consist of a new adenoid growth: as this becomes completely destroyed the base of the ulcer is formed by the remains of the muscular coat, generally blended into a firm, hard cicatricial tissue. The dense mass thus formed appears to be in great measure due to inflammation set up beneath the ulcerated surface, for under the microscope it resembles an inflammatory rather than a malignant deposit. Towards the edge of the ulcer the new growth, with the hypertrophied disintegrating mucous membrane lying over it, is apparent. The edge of the ulceration is hard and raised, and often overlaps the healthy mucous membrane. It sometimes happens that after the destruction of the mucous membrane, instead of the subjacent adenoid growth sharing the same fate it continues to increase, especially at certain points, and projects as a fungoid mass into the bowel cavity.

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[1] In the Middlesex Museum will be found two beautiful specimens; they stand side by side, and are numbered 116 and 117, series 8.

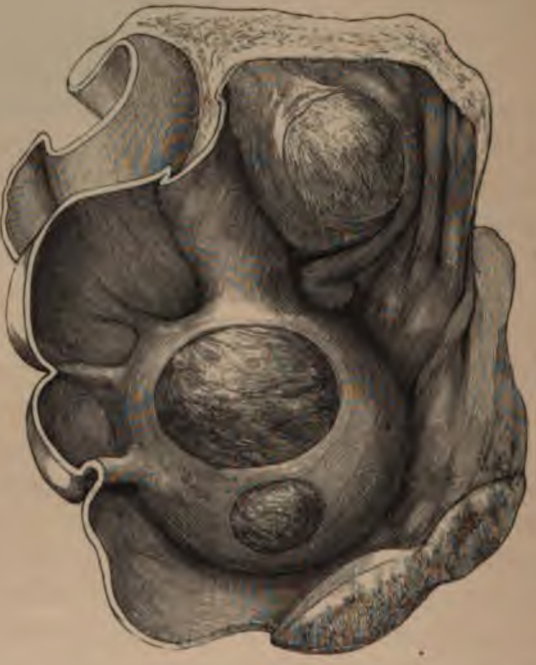
On section the borders of the diseased patches will be found raised a quarter of an inch above the level of the neighbouring bowel, and overlap the surrounding healthy membrane to a considerable extent. This heaping-up is caused by a soft, flocculent-looking growth in the submucous tissue.

The portions of the muscular coats subjacent to the diseased mass are considerably altered. They appear at first sight to be greatly thickened and intersected by dense, glistening, fibrous bands. These bands blend in a dense mass of cicatricial-looking fibrous tissue, situated external to the muscular coat, and thick bands again pass out from this and are continued into the surrounding fat, being imperceptibly lost by a gradual blending with the natural fibrous stroma of that tissue.

On a more minute examination the mucous membrane bordering on the portion destroyed by ulceration is found thickened by a large accumulation of hypertrophied papillæ, looking much like the circumvallate papillæ of the tongue, giving a villous velvety appearance to the membrane. Beneath this hypertrophied membrane is a large quantity of retiform tissue, in the deeper portion of which is found the new adenoid growth, consisting of a soft, caseous material, dipping down here and there a considerable distance towards, and even between, the muscular fibres (see Plate I. fig. 4). The portions that dip down are seen to lie between the glistening white fibres already alluded to as intersecting the muscular coat. These dipping portions sometimes expand at their extremities so as to have the appearance of inverted flasks, and in places are distinctly lobulated. The little masses are only loosely adherent to the walls of the spaces in which they lie, and when picked out with the point of a needle the cavities in which they were contained are smooth. The boundaries of these cavities are the glistening fibrous tissue before mentioned (Plate VIII., fig. 1).

As the adenoid growth extends downwards, it takes the place, and causes the absorption, of the bundles of muscular fibres lying between the fibrous trabeculæ; the trabeculæ themselves, however, instead of being destroyed, appear to become greatly thickened.

FIG. 21.



MALIGNANT TUMOUR OF THE INTESTINE.

A malignant tumour, which has raised the mucous membrane and projects into the cavity as a nodule the size of a pigeon's egg. On the surface of this nodule the mucous membrane has been destroyed in two small circular patches, one the size of a sixpence, the other about a quarter as large. At these spots the growth, relieved from pressure, slightly projects but is rather smooth than fungating. There are two smaller nodules in this specimen about half the size of the one described; over these the mucous membrane is still intact.—Drawn from a specimen in the Royal College of Surgeons' Museum.

To face page 325.

Beneath the central or older portions of the growth, the muscular coats are replaced by dense white fibrous tissue, the result of enormous thickening of the natural fibrous tissue between the muscular fibres. The thickened fibrous tissue extends beyond the muscular plane, and branching into the surrounding fat blends with its fibrous stroma. These branching fibres undergoing contraction draw the fat and neighbouring tissues towards the diseased portions. If an attempt be made to dissect the coats of the rectum, the one from the other, in the neighbourhood of the disease, it will be found scarcely possible to do so, for each coat seems firmly blended to its neighbour by the great thickening of the connecting fibrous bands.

What has just been described is the appearance seen on section of that form of disease which tends to spread horizontally. We will now consider the disease when it forms more or less a distinct tumour. This second variety commences in a similar manner to the one just described, that is, as a deposit between the mucous and muscular coats. The deposit is generally at a single spot, but there may be several nodules sprinkled over a considerable area. Instead of the growth extending in a thin layer between the coats it increases in size pretty regularly in all directions, and forms a distinct oval or circular tumour projecting into the bowel cavity. Such a nodule may attain the size of a pigeon's egg, or even larger, yet still retain an intact mucous membrane over its surface. But the mucous membrane will, after a while, give way (see Woodcut), and the growth, released from pressure, quickly forms a fungating mass projecting into the rectum.[1] These tumours vary con-

[1] Specimen 1217, Royal College of Surgeons, is a good example of this

siderably in their consistency, some being so soft as to break down on the slightest pressure, while others are fairly firm. It will generally be found that the firmness of the tumour is in inverse proportion to the rapidity of its growth. Some of the rapidly growing tumours are so fragile that they fall to pieces on the slightest manipulation. On section of the firmer growths, bands of fibrous tissue can be distinctly seen by the naked eye. Such bands are scarcely visible in the softer growths.

It may be gathered from this sketch of the naked-eye appearances of adenoid rectal disease how different the appearance under the microscope would be

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form of growth at the time when the mucous membrane is just giving way. There is a tumour, which has raised the mucous membrane and projects into the cavity as a nodule, the size of a pigeon's egg. On the surface of this nodule the mucous membrane has been destroyed in two small circular patches, one the size of a sixpence, the other about a quarter as large. At these spots the growth, relieved from pressure, slightly projects, but is rather smooth than fungating. There are two smaller nodules in this specimen about half the size of the one described; over these the mucous membrane is still intact. In the same museum will be found a specimen, No. 1221. This specimen (or rather specimens, for there are two in the bottle, the second and most interesting being placed at the back, so that it cannot be seen without turning the bottle round) shows two forms of the disease in the same intestine. It is described in the catalogue as "a portion of the jejunum, on the inner surface of which is a flat tumour, superficially lobulated, occupying the whole circumference of the intestine for about two inches wide. The tumour has a soft obscurely fibrous structure, and part of the surface is ulcerated. On another portion of the same intestine a smaller nodule has been cut through, and its section presents a soft surface with long threads hanging from it." This nodule, which is as large as a plover's egg, projects into the bowel cavity like the half of a sphere. The peritoneal surface of the bowel is quite level and not pushed out by the growth. The mucous membrane is perfectly intact over the tumour: on section it looks like a collection of exceedingly fine vermicelli crowded and squeezed together; here and there a loop or end of one of these has been drawn out from the cut surface and hangs down like a fine coil of thread over an inch in length. Upon further examination they are apparently enormously lengthened villi crowded and pressed together, but not adherent. Some of these are two inches in length, but retain a uniform thickness throughout.

according to the portion of the growth examined and the length of time it had been growing. Sections involving the older portions of the disease, and in which the adenoid growth has been destroyed by ulceration, would show little more than dense fibrous tissue, the result of a preceding active condition of disease, while sections from the margin would show the cellular growth, in varying stages of development towards adenoid structure, according to the rapidity of the growth.

In order to understand the appearances found in the morbid bowel it is desirable to trace the disease from its very commencement, and follow its progress step by step.

Unfortunately the cases are rare in which the growth can be discovered at any early stage, and rarer still that opportunity is afforded for microscopic examination. There is no reason, however, to doubt but that the condition of the tissue found towards the advancing margin of the disease would supply good evidence of the condition we should have expected to have found at the precise spot where the disease commenced. In support of this view I have by me a specimen in which the disease had only existed a few weeks, and its section has much the same appearance as seen in sections cut near the border of more advanced disease. In this specimen the disease had not advanced farther than the development of a portion of mucous membrane, a quarter of an inch in diameter, into a villous-like structure, while the subjacent retiform tissue was considerably thickened and crowded with lymphoid cells, the muscular coat being normal. The evidence afforded by this specimen, together with others at a more advanced stage, shows that the morbid action commences in an increased activity of growth in a portion of the mucous membrane.

Having briefly considered the naked-eye appearance of the growth, the use of the microscope is necessary for its further elucidation. The powers I have found most convenient in examining sections under the microscope are a 1-inch for a general view of the section, and $\frac{1}{9}$ for studying the same in detail. Satisfactorily to understand the position of the growth relative to the natural structures of the part, the composition of its elements, and its method of extension, it is necessary to examine many sections cut from different portions of the morbid mass. The appearances presented by such sections will vary greatly, not only according to the portion of the growth from which the section has been cut, but also according to the variety of adenoid disease from which it has been selected.

The drawings illustrative of this portion of the subject are from sections chosen from many thousands cut from different portions of sixty separate specimens. I have taken every care to draw the specimens exactly as they appeared in the field of the microscope; and the lithographs are exact copies of my drawings.

Plate IV. represents a section of the laminar form of disease. It has been cut at right angles to the bowel cavity, close to the margin of the growth, before the superjacent mucous membrane had been destroyed by ulceration. The section displays the mucous membrane and the new adenoid growth in the submucous tissue. The follicles in this portion of mucous membrane are three or four times their normal length. Their diameter, however, is but slightly increased, their lining epithelium is large, the boundary line between the cells being very clearly defined. The bed of retiform tissue upon which the blind extremities of the follicles rest is enormously increased in thickness, and it is in this bed of tissue that the new adenoid growth is apparent, but, as seen in the figure, there is considerable distance between the bases of the normal follicles and the new glandular growth, the intervening space being crowded with a mass of small cells. There is no clear line of demarcation between the lymphoid cells of the submucous tissue and the new adenoid growth. At the upper portion of the section the submucous tissue appears crowded with the simple lymphoid cells ; in the lower portion most beautiful glandular tissue can be seen almost as perfect in its formation as the normal Lieberkühn's follicles. The change from the lymphoid cells to the gland tissue is by imperceptible degrees. If the lymphoid cells be followed downwards towards the growth, they appear as if they slowly change their character from a simple lymphoid into an epithelial type of cell. It looks, indeed, very much as if the small lymph-cells gradually surrounded themselves with protoplasm, and thus became the nuclei of epithelial cells. Anyhow, the more nearly they approach the growth the more epithelial is their character. Almost immediately after the epithelial type of cell can be recognized small embryonic-looking portions of gland tissue can be seen. These little bits often consist of four or five embryonic-looking epithelial cells arranged in a cluster. At first the acini are difficult to make out, owing to their being irregularly and indistinctly marked, but they gradually merge into the perfect and regular adenoid structure seen in the plate.

This adenoid tissue, as seen on section (Plate VIII., fig. 1), consists of a series of cavities divided from one another by fibrous tissue. In some places the fibres of this tissue are close together, forming dense bands. In other places they open out, forming a loose retiform network. The cavities vary in shape from perfect circles to long irregular channels with various inlets. These spaces are lined with a single layer of epithelial cells. The bases of these cells rest upon the fibrous or retiform tissue before mentioned, while their apices look into the cavity. Cavities, however, do not always exist; they are exceptional, for it seems that the apices of the cells covering one wall of the cavity are in contact with the apices of those of the opposite side. In some instances the cavities are obliterated by the opposite walls coming into contact as if from external pressure; in others they become filled by offshoots growing from the epithelial boundary of their walls.

These offshoots frequently show a beautiful tree-like arrangement, the original stalk throwing off secondary and tertiary branches. The stalk and branches consist of retiform tissue, the surface of which is covered with epithelium (Plates V. and VII.). In this way the interior of many of these cavities is completely filled with adenoid tissue. However complicated be the pattern formed by the crowding together of these branches or convolutions, every branch, whether it be primary, secondary, or tertiary, will consist of its central stalk of retiform tissue, upon which the epithelium is arranged in a bipenniform manner—*i.e.*, bipenniform as seen on section, for if the whole thickness of the branch could be seen it would, of course, be entirely covered by epithelium. In examining the tumour as it extends into the deeper tissues, it must be remembered that it is not merely the new growth that is seen, but it is the new growth *plus* the remains of the old normal structures into which it is growing, and partially displacing. Thus the growth has not the same regularity of structure as when growing unimpeded on the surface. Here and there bands of thickened fibrous tissue can be seen, which represent the connecting links which normally exist between the muscular and mucous coats. These bands seem to have offered obstruction to the advancing growth, which has insinuated itself around or between them, and thus become very irregular.

In order to understand the true arrangement of tissue belonging to the new growth, a specimen must be selected which is growing unimpeded into the cavity of the bowel. Before, however, cutting such a specimen into sections, the free surface immersed in spirit should be carefully examined with direct light by a two-inch power. The surface of some of the tumours thus viewed has a very remarkable appearance, resembling an ant-hill thickly studded with fungi. Upon closer inspection these bodies are seen to be projections from the surface of the tumour. Some are mere asparagus-looking spikes, while others are thin broad leaves arranged like those of an artichoke.

On cutting the tumour into fine sections, the appearance presented beneath the microscope will depend upon whether the section has been made parallel with or at right angles to the growing surface. If cut in the first direction, a beautiful network of circular, oblong, or irregular cavities will be seen. Some are open, lined by a single layer of epithelium ; others are filled by secondary offshoots. The groundwork between the spaces consists either of a delicate open tissue filled with leucocytes, or of fine bands of fibrous tissue (Plate VIII.).

In viewing such a section it must be remembered that it represents but an isolated slice from a beautiful and complete structure, in order to understand which sections must be made so as to include the free or growing margins.

If such a section be made and examined by the microscope, it shows very clearly the structure of the projections already mentioned as growing on the surface.

The degree to which these projections are developed varies enormously in different tumours. In some they are so highly developed as to cover the whole surface of the tumour with an infinite number of almost tree-like projections, in which central stalks of fibrous or retiform tissue can be seen shooting upwards and sending off lateral offshoots on which the columnar epithelium is arranged in a bipenniform manner (figs. 1 and 2, Plate V.) ; while in others, the projections are much more simple, amounting to little more than the raising of the epithelium into undulating ridges (fig. 2, Plate VI.). Some of these projections, as shown in section, look like villous spikes, but it must be borne in mind that this appearance is produced by the specimens being thin slices, and therefore many of these spikes are but broad processes or leaves seen in section (fig. 1, Plate VI.).

Both surfaces of each leaf consists of a layer of columnar epithelium, between which lies the retiform tissue forming the central portion of the leaf. In some places these leaf-like processes have a tendency to bend over towards each other at their margins; in others, the leaves curl upon themselves, their opposite borders coming into contact. Sometimes, however, each border curls upon itself like a dried-up leaf. In some, at one or more points along their surface, little ridges appear, which in time become secondary leaves, and after a while behave in a similar manner to the primary ones. These secondary processes always appear on the concave surface of the parent leaf, so that they often become enclosed by its advancing border. The secondary offshoots, just mentioned, throw off tertiary projections, so that ultimately an exceedingly intricate pattern is produced.

By reference to Plate VI., fig. 1, the explanation of the cavities previously described, whether lying near the surface or far away in the substance of the tumour, and lined with epithelium, is apparent; for it will be at once seen that such epithelium was at a previous stage a portion of the surface of the tumour.

In a previous publication on this subject I stated my belief that these cavities were actually cut off from the surface by the arching over and subsequent coalescing of the cells forming the epithelial margin. As the result of further observation, I do not now believe that such spaces are in reality actually cut off by such coalescing, nor is it necessary that this should be the case to account for these cavities. It is probable that the epithelial lining of such a cavity is still in continuity with that on the surface through intricate and convoluted channels. These cavities in the tumour, far away from the surface, become filled with secondary growths by a means precisely similar to the extension of the growth on the surface.

The method by which the free epithelial border extends, should be studied under a high power. The process is as follows:—At one or more points along the border the epithelial cells increase in length, so that they stand out like a small bud beyond the heads of their neighbours.

If such a bud be closely examined it will be seen that the two central cells forming the group act as the leaders of the growing branch. At the same time it is seen that these lengthened cells are in an active state of generation, and appear as if multiplying by cleavage of their extremities (Plate VII.). As new cells are progressively formed they bend over and gradually assume a direction at right angles to the line between the primary cells. The line of junction between the walls of the two original cells, which at first was barely visible, becomes more strongly marked, assuming a distinctly fibrous character, and increases in thickness at the expense of the cell contents. After a while small dark cells appear in the very centre of this line, as if they were again separating the bond of union by which the two contiguous cell walls had united to form the original fibre.

Such cells become vacuolated, and the central line becomes a channel. In time a considerable amount of retiform tissue is formed in the centre of the growing leaf. It would appear as if the fibres of this tissue were formed from what is left behind of the walls of the epithelial cells, that is to say, if the line of junction between any two of the contiguous cells forming the surface of the branch were followed inwards it would be continuous with the fibres of the retiform tissue (Plates II. and X.).

The formation of fibrous tissue has long been a vexed question with physiologists, the prevalent opinion being that it is a formation from connective-tissue corpuscles, and that when found in new growths it is an extension upwards from pre-existing connective tissue. Its formation in health will not be here considered, but in the morbid tissues under consideration I believe that it admits of positive demonstration that it is in great measure derived from the walls of the epithelial cells.

The connection between the fibrous and the cellular elements in any given portion of a morbid growth is not easily traced. The stages of the transformation of the one into the other have passed away, leaving a more or less perfectly formed tissue as a result.

On the margin of a growing tumour, or in the normal tissue, increasing more actively than usual in its immediate neighbourhood, a definite relation can be traced between the cell growth and the fibrous tissue formation ; and it is a fair inference to assume that the fibrous tissue of the deeper portions has been produced by a similar process.

The large and clearly defined columnar cells found lining the acini of adenoid growths in the rectum afford singular facilities for tracing the formation of intercellular fibrous tissue.

Almost every writer upon gland structure has assumed the existence of "basement membrane," upon one surface of which are the epithelial cells, and upon the other the retiform tissue, the cells being kept in position by the adhesion of their bases to the membrane. Granting for the moment that a clearly defined line can be seen in some sections lying between the epithelial cells and the subjacent tissue, it does not necessarily follow that such a line is a section of a thin membrane independent of the cells. Such an appearance may be produced by the bases of the cells resting on the same level and being cut on the same plane. If a section be made of a portion of a bee's honeycomb an analogous line can be seen running down its centre, marking the boundary between the cells of opposite sides, but yet it admits of clear proof that such a line belongs to no independent structure, but is produced by the bases of contiguous cells, each of which participates in its formation.

Now, this fibrous line, supposed to mark the existence of "basement membrane," is frequently absent if the section be cut exceedingly fine in a direction parallel with the long axis of the cells, and direct continuity can be traced between the fibres of the retiform tissue and the lines between the epithelial cells.

In Plate VII. and in fig. 2, Plate X. such continuity is seen. It remains, however, to be shown that the fibres are formed from the cell wall rather than by an extension upwards of pre-existing fibrous tissue.

If sections be made in such a way as to cut the growing cells across close to their apices, the lines marking the contact of the cells with one another will show as a fine hexagonal network. This hexagonal network must inevitably be the form taken by soft cylinders in contact with each other (fig. 20, Plate II.). If a second section be made, nearer the bases of the cells, the hexagonal network will have assumed a circular form, the lines forming it being considerably thicker than those of the first section, the cavities being correspondingly smaller (figs. 21 and 22, Plate II.).

It is impossible to doubt that the fine lines described in the first section are due to the thickened outline of the protoplasm of the cells, for the same appearance is produced in every cellular effusion.

It can, moreover, be shown by vertical sections (fig. 4, Plate III,) that the fine network just described, formed by the apices of the epithelial cells, is in direct continuity with the thicker lines seen in the second section, and beyond these with the subjacent fibres of the retiform tissue. If, therefore, it be accepted that the epithelial cell wall and terminal fibre of the retiform tissue be one and the same structure, it would be a fair inference to draw that the deeper part of the same fibres had a similar cellular origin.

In examining various cross-sections of epithelial cells, it will be seen that the original fine hexagonal network does not undergo an equal thickening in all its parts, for it is at the angle of the hexagons that the greatest thickening takes place, and on this account the circular form of the spaces is gradually assumed.

The hexagonal or circular outlines are often very irregular, as the result of unequal pressure from various quarters. In some sections, such a network has an appearance strongly suggesting the idea of a series of stellate cells, anastomosing by their processes. This delusive appearance is occasioned by the processes of the supposed stellate cell, being in fact portions of the circumference of pre-existing cells; the body of the supposed stellate cell being the point of greater thickening, where four or more ordinary secreting cells came into contact (figs. 24 and 25, Plate II.).

I must confess to some difficulty in understanding the existence of stellate cells. I have never seen one isolated, and it is difficult to conceive that, if the fine lines radiating from such cells be in reality hair-like processes, how it comes to pass that a razor should happen exactly to catch many such processes on a plane so precisely parallel as to show them on section anastomosing across from one to the other. On the other hand, if these supposed processes were membranous walls of other cells, they would always show like fibrous lines in whatever direction the section was cut.

Believing the fibrous tissue to be the permanent refuse, so to speak, of pre-existing cells, the appearance it presents in these morbid growths will be briefly described.

It is first clearly recognized as an open network at the bases of the epithelial cells under the name of retiform tissue.

If the fibres of this tissue be traced downwards from the surface to the deeper parts, it will be observed that the majority of the fibres gradually converge, and coming in contact form bands of fibrous tissue of greater or less thickness. All the fibres, however, do not thus converge, for occasionally, instead of coming in contact, they form boundaries to well-marked spaces or channels.

Now and again, fibres, forming a bundle, once more spread out in an open network.

Bearing in mind that the examination of this retiform tissue is by thin slices only, it is at once suggested that the appearance presented is not the result of a simple network of fibres, but may be due to a series of convoluted channels, the fine walls of which, on irregular section, give the appearance of a fibrous network. The convolutions of such channels would in great measure account for their not looking like tubes on section. Occasionally, however, a very suggestive appearance is produced in the retiform tissue lying between two adjacent follicles, and instead of a haphazard-looking network, the fibres are arranged in two or three concentric circles, between the lines of which a single layer of lymphoid cells lying in contact with each other can be seen as if contained in a definite canal.

If the retiform tissue is really a series of channels, each channel would appear to commence at the base of a glandular epithelial cell, and such a cell must be regarded as the active living root of the lymph system. If the retiform tissue is really a tubular structure, some of the channels become obliterated by their opposite walls coming in contact, as if by stretching, while others dilate into large lymph spaces.

I will now glance briefly at some of the leading characteristics of the cell elements found in these growths. These cells represent extraordinary variations (see figs. 1 to 12, Plate II.).

One of the most prominent features of these morbid cells is their large size. Whereas the normal glandular epithelium is seldom more than $\frac{1}{1000}$th of an inch in length, many of the cells in question are at least ten times as long, some of them of such a size, in fact, as to be almost visible to the naked eye.

On the surface some of these cells resemble tubes $\frac{1}{100}$th of an inch in length, but not wider than the $\frac{1}{800}$th of an inch The line of contact between the adjacent cells is very clearly marked. In some parts, these tubular cells are filled with a faintly staining, homogeneous, granular material, without the slightest trace of nuclei. They appear, in fact, to be barren cells, like pods without peas. In others, again, all the cells are nucleated. Some contain two or three nuclei arranged equidistant apart between the summit and base of the cell. In these circumstances the cell wall bulges opposite the nuclei, with corresponding hour-glass constriction between the nuclei.

The nuclei in these multi-nucleated cells are so arranged that the bulging portion of one cell fits into the hour-glass constriction of its neighbour, so that every alternate nucleus only is on the same level.

Another form of cell, especially in the growing buds, is where the lower or attached half of the cell is narrowed to the finest tube or line, but its outer half forms an oval bulb, which contains the nucleus. Sometimes the condition is reversed, the outer portion of the cell being reduced to a narrow tube, the nuclei being contained in the bulging portion at its base.

The tubular cells just described are met with in the chronic forms of adenoid tumour. In the more rapid growths the cells are of a more spheroidal shape and more irregular, presenting every grade of variation between a lymphoid and an epithelial type.

On page 334 the development of the leaf-like offshoots by the progressive formation of epithelial cells has been described. If, however, we more closely examine the club-like extremities of these growing buds, it will be seen that the young epithelium is first represented by a little projecting mass of protoplasm closely resembling a leucocyte (Plate VII.), and that the epithelial type of cell is subsequently assumed by this little mass remaining as a nucleus, and surrounding itself with a material staining more faintly. It thus appears that a young columnar epithelial cell on its first emerging into distinctive life bears a closer resemblance to a simple leucocyte than to its own epithelial parent.

The method has already been described by which the tumour extends on its free surface, and it has been shown that it does so by a progressive development of its epithelial border.

The view is commonly held that the growth advances into the deeper tissues by a similar process, and that it is by a downward prolongation and branching of the follicular crypts that the epithelial growths are formed in the deeper parts.

That this is one method by which the tumour extends into the deeper portions I admit, but that it is the only, or even the commoner, method of extension is doubtful. Until quite recently, I had never been able directly to trace this downward extension, but a specimen has recently come under observation in which something like direct continuity can be traced between the surface follicles of the mucous membrane and those in the body of the tumour. As a rule, however, careful search fails to show any such connection.

Notwithstanding the inability to trace this downward growth from the surface, such continuity might have existed, but yet have remained undiscovered in the sections. It is possible that such a downward dipping might have begun at a single point and then have spread horizontally like an inverted mushroom. In such a case the connection could not be demonstrated save in a fortunate section through the connecting pedicle itself. Seeing the destructive process which occurs in the older portions of these growths, such a pedicle would probably have disappeared before the specimen came under observation.

It is certain that these growths must have other means of development in addition to direct extension by continuity of their epithelial element, otherwise the development of morbid adenoid tissue in isolated patches on the peritoneal coat of the bowel, or in the internal organs, could not be accounted for. It admits of demonstration that these separate points of disease are not directly connected by epithelial tissue with the primary growth.

Again, when we come to examine under the microscope the line of demarcation between the morbid growth and the tissue which it is invading, we generally fail to find a clear epithelial border marking the boundary. In the more chronic growths a line of fairly formed epithelium may occasionally be seen marking the boundary, but this is not generally the case. For if a section be cut through the new growth, extending into the healthy submucous tissue, it will be seen that there is a kind of no man's land intervening between the growth and the normal tissue. This is infiltrated with a cloud of cells.

The cells forming the extreme border of this infiltration differ in no way from ordinary lymphoid cells, but as they are traced towards the growth they are seen gradually to become larger, and to assume a distinctly epithelial type. These in their turn gradually assume the appearance of an ill-marked adenoid tissue, which in time assumes a more definite type.

In short, the appearances suggest that the growth increases by the gradual conversion of the lymphoid cells on its border into adenoid tissue, and that the source from which these lymphoid cells are derived is the epithelium of the growing tumour, a portion of them gradually developing into the likeness of their parents causing the extension of the growth.

I have already described, on page 18, how the growth invades fatty tissue—viz., by the infiltration of a layer of leucocytes between the fat cells, and by these leucocytes gradually assuming an epithelial appearance.

It may be asked whether the foregoing description applies equally to the rapid growing malignant adenoid disease running its course in a few months, and to the more chronic adenoid growths that may be many years in progress without producing much evil. I would answer that the plan and structure of the growth is similar, but the more rapid is the growth the less perfect and complete is its structure. If, for instance, under a low power we examine a section, such as is seen in Plate IX., fig. 1, which was a rapidly recurrent tumour that had attained a considerable size in a few weeks, we can there trace the whole outline of an adenoid growth; the various convolutions can be made out, the epithelial, fibrous, and retiform tissues can all be seen in their relative situations; but yet nothing is distinct or clearly defined, and it looks as if the specimen was seen through a thin veil. Upon examining the minute structure under a higher power, the want of definite formation becomes still more apparent, for instead of the epithelial lining showing well-marked cells, it has rather the appearance of a band of darkly stained protoplasm, indistinctly striated at right angles to its length, and well sprinkled with nuclei (Plate IX., fig. 2). If we examine the tissue lying between these vaguely marked epithelial cells, instead of the retiform and fibrous tissue of the more chronic growth, we find embryonic-looking oat-shaped fibrous tissue cells with little or no definitely formed fibrous tissue. An appearance exactly similar to the so-called spindle-cell sarcoma is produced, but the identity of this sarcomatous-looking material with true retiform or fibrous tissue is established, beyond doubt, by following a track of it in the direction of the base of the growth, where its real nature gradually becomes apparent as it merges into well-marked fibrous tissue.

Not uncommonly in a single growth may various degrees of development of the adenoid tissue be found, from portions so embryonic as scarcely to be recognizable, to others in which well-marked glandular or villous tissue is apparent. Again, a growth which upon its first removal showed well-formed glandular structure, upon its recurrence often shows a tissue of a much more embryonic character.

Diagnosis and Symptoms.—Few diseases commence in a more insidious manner than malignant disease of the rectum. It is always difficult, and in many instances quite impossible, to obtain exact data as to the duration of the symptoms; nor is this a matter of surprise if the nature of the disease be considered. At one time a patient is absolutely healthy, at a later period as certainly diseased; the gradations between the two are by exceedingly fine degrees.

The earliest symptom of malignant, as of many other diseases of the rectum, is the consciousness of the patient that he possesses such a portion of the body. There is just sufficient uneasiness about the part to excite the imagination from time to time, this uneasiness seldom at first amounting to such distinct pain as to make the patient aware that there is anything actually wrong; sometimes there is merely a sensation of itching about the anus. As the disease advances symptoms of a more definite character make their appearance; these symptoms are very varied. Speaking generally, and in typical cases, the discomfort gradually increases to a dull, heavy pain, especially noticed after exercise and at night. The fæces become streaked with blood or covered with a white slimy matter. As time goes on the symptoms of stricture appear, and the motions can only be passed by much straining, when they come away in fragments, or, if cohesive, are small in diameter, and more or less flattened, and sometimes they are distinctly grooved. At this period constipation often alternates with diarrhœa. The anus becomes excoriated, although not always so, and the linen is stained with a dark offensive discharge. The patient has a constant feeling of the bowels being full and requiring evacuation. At times there is considerable tenesmus, the frequent calls to stool resulting in a blood-stained purulent discharge. The patient begins now rapidly to emaciate, the pain becomes more constant and severe, and he is much troubled with wind. Sleep is only obtained by opiates. Secondary symptoms begin to develop, the digestion is impaired, the legs swell, the liver, perhaps, becomes large and nodular from secondary affection. The patient gets worse, and gradually dies of exhaustion, worn out by pain and bleeding, or the fatal termination may be more abrupt by an attack of acute peritonitis, or not infrequently by the coming on of complete intestinal obstruction. From the commencement of the symptoms to a fatal termination, the time depends partly on the nature of the cancer, and partly on the age of the patient. When soft and fungating, its course is more rapid than when spreading as a superficial ulcerating layer, while the younger the patient the more quickly does the disease run its course. Thus, the most rapidly fatal case (84) of which I have notes was that of a lad, aged 17, seen in consultation with Dr. Forbes, of Rock Ferry. The progress of the disease was so rapid in this case, that the period from the onset of the symptoms to the date of death was only eight months. As a rule, however, the disease destroys life between the second and third year after the onset of the symptoms, though occasionally life is extended to a longer period. To illustrate such a series of symptoms, I have selected the three following cases from my note-book.

The first illustrates a somewhat rare form, for the amount of disease in the bowel itself was very small, compared to that in the surrounding tissues; the second and third cases represent very common forms of the disease.

Case 85 (for the notes of which I am indebted to Mr. Gillam, our late house-surgeon).—A. H., admitted into the Great Northern Hospital early in 1877. No family history of phthisis or tumours. He had been a healthy man up to two years ago. At that time he first noticed an uneasy sensation about the rectum. This sensation scarcely amounted to pain, except occasionally on the passage of a constipated motion. After these sensations had existed some months, the patient noticed for the first time a little blood in the fæces. His linen, also, was occasionally blood-stained. At this time he consulted a doctor, and was treated for piles, but the symptoms remained nearly the same during the next twelve months. He then thinks that he caught cold; anyhow, the symptoms became, on a sudden, considerably aggravated. He suffered so much pain as to be kept awake at night, and had a good deal of diarrhœa. About a week after this attack he had a good deal of offensive blood-stained mucous discharge, but with this discharge the pain became less. The discharge has continued ever since, but only in moderate quantity. For the last six months he has had considerable trouble with his motions, and has taken much purgative medicine. The motions have been getting smaller, being scarcely thicker than the little finger, and always passed with difficulty. On admission into the hospital he was weak and much emaciated, with a sallow jaundiced appearance. He complained much of a burning pain in the region of the coccyx; this was always worse at night, depriving him of sleep. There was only a small amount of discharge from the anus. For two or three consecutive days he would complain little of pain during the day. At other times he would suffer more, and be much tormented with a constant desire to stool. The pain was not aggravated on passing a motion, after which, indeed, he often obtained relief.

Upon examination a considerable amount of œdema existed over the sacral region, and pressure on this spot caused pain. The liver was not noticed to be enlarged, nor did it feel nodular, but three months later it could be distinctly felt to be both enlarged and nodular. There were two very small, slightly œdematous folds of skin about the anus, otherwise it appeared healthy. On passing the finger into the bowel it felt healthy for about an inch and a half, then became harder than natural, and a distinct lump could be felt projecting under the mucous membrane of the posterior wall. It appeared at first as if at about three and a half inches from the anus the bowel ended in a cul-de-sac, but upon a little manipulation the tip of the finger could just enter a tight annular stricture, which appeared to extend upward some distance. The bowel was evidently firmly adherent to the surrounding tissues; the tip of the finger in the stricture was unable to move it. The patient lingered at the hospital for some months, gradually growing weaker. He was one night seized with sudden severe abdominal pain, which in a few hours terminated in fatal collapse.

The post-mortem was performed forty-eight hours after death. The body was thin and emaciated, the blood in the vessels was not coagulated, the belly was much enlarged and tympanitic. Upon opening the abdominal cavity a large quantity of purulent fluid escaped; the whole of the right and left hypochondriac regions were occupied by the liver, which presented a mottled appearance, being thickly studded over the surface with hard white masses about the size of threepenny-pieces. Upon the liver being removed and cut into, nodules were seen pretty equally distributed over the left side, each being about the size of a pea or bean. On the opposite or right side were three large white patches instead of the smaller deposits found on the left, the largest patch being two and a half inches in diameter. These had at their margins a stellate appearance, due to white bands radiating a short distance into the healthy structure; the centre of these masses was of a soft consistency, the interior of the larger patch being like thick cream. The liver weighed seven and a half pounds, it was in no place adherent to the parietal layer of the peritoneum, and it appeared as if this membrane had resisted the advance of the disease. The gall-bladder was distended with bile, the spleen and kidneys were free from disease, but the pancreas was affected with nodules much in the same manner as the liver. The whole chain of lumbar glands was infected, many of them being the size of a hen's egg. The intestines were apparently free from disease, except at a spot situated four inches from the anus; at this point the intestine became quite suddenly constricted. This constriction felt like a tight ring outside the mucous membrane; this was the stricture felt during life.

The bowel was greatly distended above the strictured portion and full of soft fæces, but no ulceration could be detected in it. A further examination of the seat of stricture showed that the constriction was caused by a deposit of cancerous material, one-eighth of an inch thick and a quarter of an inch broad, just at the line of the recto-vesicular fold of the peritoneum. This band extended half round the bowel. A tight portion of fibrous tissue occupied the remaining half of the bowel circumference, and was continuous at each end with the line of cancer. Indeed, it appeared as if some of the fibres of the fibrous tissue that here encircle the bowel were continued into the cancer line, and that the contraction of the cancerous portion had caused the tightening of the fibrous band.

The deposit of cancer was beneath the mucous coat of the bowel, involving the submucous and muscular coats. Upon putting the finger into the cul-de-sac between the rectum and bladder from the opened abdomen, the peritoneum passed over the deposit just described with quite a smooth surface. Behind the rectum, between it and the sacrum, but not adherent to the wall of the bowel, was a mass of cancer as large as an orange, softened in the centre to almost creamy consistency. This mass had caused the absorption of a considerable portion of the coccyx and lower part of the sacrum. It appeared as if this mass sprang from one of the lower coccygeal glands.

Case 86.—J. W., aged 42, a well-developed, tall woman, with a good family history. She had the appearance in the face of some suffering, but was not much emaciated. Eighteen months ago she noticed pain in the back about the lumbar region. She had no other symptom until a year ago, when she first noticed a slight discharge of blood, but she suffered no pain or uneasiness. Seven months ago she first had local pain, but this only during and after defecation. After a few weeks the pain became continuous, especially bad at nights, compelling her to walk about the room for hours. Three months ago a fetid, sanguineous, purulent discharge came on. After the onset of this discharge the pain became a great deal less. She has lost blood for six months from the rectum; slight at first, more of late, but never profuse. Has had little diarrhœa. The purulent discharge, which soon after its first onset was very diffuse, has been much less of late.

Upon examination, a growth of firm consistency, the size of a large nut, was seen springing from the mucous membrane just within the anus. Upon introducing the finger within the bowel, the rectal wall, especially the anterior portion, felt hard and irregular, with some ulceration in places, and was more like a semi-rigid tube than a contractile canal. As far as the finger could reach, the bowel was thickly sprinkled over with hard nodules, from a sixth to a quarter of an inch in diameter.

The rectum, notwithstanding its nodular, rigid condition, was fairly movable upon the surrounding parts. On a further careful examination under chloroform, it was found impossible to ascertain the limits of the disease; no operation was thought advisable. She continued to attend as an out-patient for the next two months, obtaining great relief by using, night and morning, warm injections of starch and opium (thin fluid starch ℥j, liq. opii sed. ♏xx). The patient became gradually weaker, and died, I believe, about four months after she was first examined at the hospital.

Case 87.—A medical practitioner at Manchester, aged 56, consulted me for the following symptoms. His attention was first called to the bowel by a sudden attack of diarrhœa seven months previously. The diarrhœa passed off in a few days. For nearly a year before this attack he had felt from time to time a slight sensation of the bowel not being completely empty, but he never had the slightest pain or inconvenience, and never passed any blood. Since the attack of diarrhœa, however, he has on three or four occasions noticed the fæces stained with blood. He has also noticed that when the fæces are soft they are distinctly grooved on one side. He has some discomfort about the bowel, but nothing like pain. He feels well and strong and is able to play golf, but, somewhat to his surprise, he finds that he has lost a stone in weight during the last three months. Upon examination, I found the anus quite healthy with a normal sphincter, and there was no excoriation and no discharge. The first inch and a half of the bowel was also natural, but the finger then came into contact with a series of hard nodular projections, most marked over the prostate, but extending all round the bowel. On further examination these projections proved to be the margins of a considerable mass of malignant deposit.

This patient persevered for some time with the Chian turpentine, but without the least benefit, and died twenty-two months after my examination.

Perhaps it will be well to consider in a little more detail the various symptoms mentioned.

Pain is of such common occurrence in all rectal disorders that it only becomes a valuable adjunct to the diagnosis when in conjunction with more definite symptoms. It is seldom an early symptom, being commonly the result of the morbid changes in an advanced stage of the disease, for at first discomfort merely is experienced, especially after walking or sitting long in a constrained position. There is often an uncomfortable feeling of wanting to stool, yet upon trial nothing but a little mucus is passed. As the disease advances the pain increases. So far as my experience goes the amount of pain greatly depends upon the situation of the disease. When situated at the anal margin or opposite the prostate the suffering is much greater than when situated higher up the bowel, in which situation the tissues have more room to expand. Sometimes when situated high up the bowel scarcely any pain is felt until quite late in the disease. The sharp burning pain complained of during and after the passage of a motion is due to the irritation of the tender ulcerated surface. Not infrequently, as recorded in Case 85, a dull, aching pain, more or less constant, is referred to the lumbar or sacral region. This pain is often rather relieved than aggravated by the passage of fæces. It is due to the direct pressure by the disease on the nerves lying between it and the sacrum. In the case referred to, actual absorption of a considerable portion of the sacrum had resulted from this pressure. As already noticed, the onset of pain is generally gradual, but it not infrequently happens that a somewhat sudden aggravation of the pain occurs, followed in a few days by a copious muco-purulent discharge which greatly relieves the patient. There can be no doubt that this acceleration is due to accidental inflammation of the parts in the neighbourhood of the disease, and is often accompanied by a rise in the temperature. On the whole I am inclined to believe that the accounts given of the pain suffered in rectal cancer are much exaggerated, and that it is not more severe than is often suffered in fissure or inflamed piles. I have more than once found considerable masses of cancer in patients who were quite unaware of the disease owing to their having suffered scarcely any discomfort. If there is any tendency to inflammation about the growth the pain undoubtedly becomes severe. Under these circumstances the patient can scarcely bear examination. Some patients, again, seem to have a natural anæsthetic condition of their whole nervous system, while others are morbidly sensitive. Indeed, it is a fact constantly observed by all surgeons that no two patients appear to suffer in the same degree from similar diseases or injury.

Bleeding from the bowel is almost sure to take place at some period of the disease; it appears to depend upon two causes. In the early stage, the blood comes from the congested mucous membrane lying over the disease, and is much increased by constipation, which retards the free return of venous blood. At a later period it may not only be due to this cause, but to actual ulceration of one of the hæmorrhoidal vessels. Cases are recorded in which the bleeding has been so alarmingly persistent as in itself to cause the death of the patient. Bleeding from the bowel, when copious and persistent, and when not dependent upon hæmorrhoids, should always be looked upon with some suspicion. There are, however, many other conditions besides malignant disease which may give rise to the bleeding. As an instance, it may not be out of place to mention an exceedingly interesting case, for the details of which I am indebted to my friend Mr. Edwards, late house-surgeon to St. Mark's Hospital.

Case 88.—A patient was admitted into St. Mark's on account of hæmorrhage from the rectum. She had been very unwell, with vague pains about the abdomen, for some months. During the last few days she has had violent bleeding from the bowel. Soon after admission she had another violent attack of bleeding, from which she never rallied, and died in a few hours. A post-mortem examination showed a small deep ulcer of the stomach, which had opened into the gastric artery. She had vomited no blood, nor could any other lesion be found in the alimentary canal.

A somewhat similar case of profuse hæmorrhage from the bowel, the result of gastric ulceration, is mentioned in the catalogue of the Middlesex Hospital (Series 8, No. 33), but in this case there was also hæmatemesis.

Discharge of a muco-purulent nature is seldom absent if the disease has existed any length of time. At first this is simple mucus, but becomes purulent after ulceration has taken place, while at a further stage of the disease it may become dark, forming the "coffee-ground discharge" so often described. From time to time this discharge is considerably augmented in quantity, while at the same time it is more purulent in its nature. A day or two prior to this increase the patient will complain of intense pain, which is greatly relieved by the discharge. The explanation of this has been already mentioned. The discharge has a highly offensive odour, the peculiar odour being considered by some surgeons pathognomonic of the disease. Personally, I must confess to be unable to verify these assertions beyond the fact that all discharges from this neighbourhood are very offensive.

The examination of this discharge under the microscope may be a considerable aid to the diagnosis in those cases in which the disease is beyond reach of the finger. The bulk of the solid particles found in the discharge consists of lymph or pus-cells with fæcal *débris*, but not infrequently little masses of the growth may be detected here and there, especially if the growth be of a soft friable nature. Such little portions can of course only be observed in a comparatively advanced stage of the disease after ulceration of the mucous membrane.

Diarrhœa is an intermittent symptom during the course of the disease. The sufferer often has a sensation as if he required to go to stool, especially in the morning, and, after a little straining, passes a small quantity of fæces, as well as some muco-purulent material. He does not feel, however, as if the bowel had been emptied, and may have recourse to the closet many times. On these occasions the discharge is more of a muco-purulent material than any true fæcal evacuation.

In using the word diarrhœa, the surgeon must be careful not to be misled by regarding it in all cases as resulting from simple looseness of the bowels. Indeed, when there is any stricture present, the so-called diarrhœa is often but a symptom of extensive fæcal collection behind the stricture. What the patient passes in these cases is a purulent mucoid discharge, stained by small particles of fæces washed from the surface of the collected mass.

Constipation is a symptom of the utmost importance as a means of diagnosis, if the disease be too high for digital detection. It may exist to almost any extent, from a slight trouble at the commencement of the disease to a grave complication as the disease advances; the motions being often small and narrow, or flattened, and only passed after doses of purgative medicine. Complete intestinal obstruction, a frequent complication of intestinal cancer, sometimes results from the blocking up of the intestinal canal by the gradual encroachment of the growth into its calibre. It is not rare, however, to find that the earliest symptom causing a suspicion of cancer of the large intestine is the sudden onset of complete obstruction. Such a case I had an opportunity of seeing in the practice of Mr. Howard Marsh.

Case 89.—A woman was admitted into St. Bartholomew's Hospital with symptoms of sudden obstruction. She stated that she had enjoyed good health up to the onset of the attack, nor had she been previously troubled with constipation. The attack commenced suddenly while at work, and was followed by obstinate vomiting and constipation. The symptoms having existed for some days, and the case appearing urgent, while the sudden onset of the symptoms suggested mechanical strangulation, it was deemed advisable to open the abdominal cavity. This being done, Mr. Marsh felt a hard cancerous mass in the walls of the bowel, which caused the obstruction. The bowel was opened above the obstruction, stitched to the side of the wound, the patient making a good recovery. The cancerous mass was not interfered with, so that the exact mechanism of the constriction was not apparent.

At first sight, it does not appear easy to explain the sudden obstruction of the bowel by a cancerous mass within a few hours of its being completely pervious. Specimens in our pathological museums throw much light upon what is otherwise obscure. On page 224 will be found the account of a post-mortem I performed, in which a stricture of moderate size had become completely plugged by a single hard scybalus of fæces, the size of a nut. In Guy's Hospital Museum (Specimen No. 1887^{75}) is a specimen of adenoid cancer causing intussusception. In this case, a patch of adenoid disease affected a portion of the bowel, somewhat narrowing its calibre. The pressure of fæces above this had caused its invagination into the bowel immediately below the intussusception, producing complete obstruction. Many such specimens have been shown at the Pathological Society, and such a condition readily explains the sudden onset of obstruction without previous warning.

A very slight amount of such intussusception is sufficient to cause obstruction.

Case 89A.—A woman of middle age died after colotomy, performed for sudden intestinal obstruction.[1] At the post-mortem was found a narrow ring of growth projected into the canal for about a quarter of an inch all round the circumference of the bowel. It looked like a diaphragm, the hole through its centre just admitting the little finger. The portion of bowel immediately below this diaphragm was considerably contracted, so that when the growth was pressed upon from above it passed a short distance into the narrow portion below, the opening through its centre being completely obliterated.

Another, although perhaps rarer condition, is sometimes found, which will also account for sudden obstruction. In such a case a considerable dilatation forms above a slight annular stricture; after a time a pouch from this dilatation extends downwards below the level of the strictured portion of the gut. The collection of a hard lump of fæces in this pouch pressing upon a point below the stricture occludes the bowel, the margin of the strictured bowel being closed in a valve-like manner.

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[1] St. Bartholomew's Hospital.

Breschet publishes the case (90) of Talma, in which he describes such a condition causing obstruction. In this case Nature had made a marvellous effort to remedy the defect. The dilated bowel above the contraction was put into connection with the part of the rectum situated below the contraction, a new canal having established itself between the two by the absorption of the adjoining walls, adhesions having formed between them.

The various symptoms just enumerated in detail are of the highest importance in calling attention to the probable existence of cancer, and have to be relied upon if the disease is in the sigmoid flexure or upper part of the rectum ; but in the lower portion of the bowel the diagnosis can be made sure by an ocular and digital examination.

In order to make a satisfactory digital examination it is essential to have the bowel empty. With this object the rectum should be thoroughly washed out with a warm water enema. The best position for an examination is to have the patient lying on his side with the knees drawn up. From four to five inches of the rectum can be examined by the finger, and if the patient be directed to strain and bear down a further length of bowel is brought within reach. The margin of the anus should be carefully scrutinized for any portion of growth that may be in sight. It sometimes happens that a fungating projection from the anus at once declares the nature of the disease. More frequently, however, the anus is normal, or merely slightly œdematous and red from the irritation of the discharge. Upon introducing the finger, the condition of the part will depend upon the length of time the disease has existed, the portion of the bowel implicated, and the physical character of the growth.

Commonly a certain interval of healthy bowel exists between the anal margin and the lower border of the disease. Perhaps the commonest point at which the disease is situated is at a distance of two and a half inches from the anus. After this the disease is more frequently found just below the sigmoid flexure. The amount of bowel diseased varies from the smallest patch to the whole calibre for several inches, the extent being in almost direct proportion to the duration of the growth. If the examination be made at an early period, an indurated portion of the bowel may be felt. This induration does not feel like a distinct tumour, but more like a thickening and hardening of the submucous tissue. The mucous membrane is generally pretty firmly adherent to the subjacent mass. The membrane is not ulcerated, but may feel somewhat irregular on its surface, being slightly raised in places while it is depressed in others. As a whole, however, the mucous membrane, pushed up by the growth, projects more or less into the bowel cavity. As explained in the chapter on Pathology, the disease appears to spread or extend after two different methods, the most frequent being its extension as a thin, firm layer between the muscular and mucous coats. By the time this laminar form of disease comes under clinical observation, more or less extensive ulceration has occurred, and the finger can distinctly feel the firm base of an ulcer with abrupt, hard, raised overhanging margins, beyond which the disease apparently terminates somewhat abruptly in the healthy tissue. If the disease has extended so as to form a distinct tumour in the submucous tissue, the lump or lumps can be clearly felt projecting into the bowel cavity, or, again, a tight annular stricture, around which a hard deposit exists, indicates the disease. Sometimes, though more rarely, the rectum seems studded with hard, small nodules. If the disease be advanced, soft fungoid masses, blocking up the canal, may be felt; such masses bleed with the slightest irritation. When an annular stricture exists it is commonly just below the reflexion of the peritoneum.

This annular stricture is so common in malignant rectal disease that its structure requires special consideration. Sometimes it is due to a deposit of new growth in the submucous tissue around the entire circumference of the bowel. In such a case the mucous membrane may have given way and the growth protrude into the bowel all round. This, however, is not the common cause of the stricture, which appears to be generally due to a deposit of cancer at one spot of the bowel, commencing in the submucous tissue and extending into the muscular coat, and as it does so incorporating into its substance the fibrous trabeculæ of the muscular coat. These fibrous trabeculæ naturally extend round the whole circumference of the bowel, so that, when they are drawn upon at one spot by the action of the growth, it has much the same effect upon the bowel as if it had been surrounded by a piece of string, the knot of which is being continually drawn tighter.

Colloid cancer in its physical characteristics differs in some respects from the foregoing description, owing to its soft semi-fluid consistency. This disease is stated by some authorities to be the commonest form of malignant rectal disease. This is entirely opposed to my experience, for I believe that this disease is rarely met with; nor do our pathological museums lead one to suppose that it was more common formerly than at the present time. A specimen in the Middlesex Museum, Series 8, No. 131, and another in the College of Surgeons, are described as examples of this disease. It appears in both these cases as if a fine transparent membrane had been spread over the mucous lining of the bowel, and this membrane had then been raised into a number of small vesicles containing the colloid material. Some of these excrescences are so minute as to be scarcely cognizable to the naked eye; others, again, are as big as large peas; the whole, in fact, strongly impresses one with the idea that a certain number of Lieberkühn's follicles had become obstructed by a thin membrane dilated into bladder-like excrescences by the mucoid secretion.

Cruveilhier[1] gives the following excellent description of a case (91) of colloid cancer. It seems to be little more than an exaggeration of the condition just described :—" A case of colloid cancer of the lower part of the rectum of an old woman. The gelatinous matter is contained in cysts of various sizes, pressed firmly one against the other, so that an appropriate name would be encysted gelatiniform cancer. The anus was surrounded by a number of different-sized swellings, several of the larger of which were surmounted by smaller swellings, in such a way that the anal opening occupied the bottom of an extremely deep cul-de-sac. Two ulcerations could be seen at the entrance of the anus. The rectum, at a little distance from the orifice, presented a zone-like ulceration ; it was deep, and had destroyed all the thickness of the rectum in one part of its circumference and communicated with furrows, which penetrated to the diseased skin which was contiguous to the anus. The disease, which had given the rectum an enormous thickness, stopped suddenly about three inches from the anus. Immediately above the muscular coat was greatly thickened. This disease presented an appearance which I have never seen before. Imagine a multitude of acephalo-cysts of unequal size, of which some resembled pigeons' eggs, tightly pressed one against the other in a fibrous woof, and one would have a sufficiently exact idea of the disease. But these were not acephalo-cysts. The envelope of each cyst was fibrous, very dense, and very thin, and contained matter resembling apple jelly. On the surface was a cretaceous matter containing calcareous grains. In the centre of the gelatiniform matter were seen blood-vessels, resembling those formed in an egg, vessels without linings terminating in a swelling of one of their extremities. The fibrous network, in the middle of which these cysts were situated, was evidently composed of the membranes of the rectum. I there recognized the longitudinal coat of the intestine. The external covering of the rectum had not the slightest vestiges of cysts, but was alveolar tissue of fibrous meshes, filled, like a sponge, with gelatinous matter, which was squeezed out with difficulty. This degeneration extended to the skin. An extremely thin pellicle, almost epidermic, had resisted and covered the swelling on its surface. Behind the rectum was a gelatiniform mass freely supplied with blood-vessels."

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[1] Cruveilhier, Traité d'Anatomie Path. Gén., tom. v.

Case 99, page 410, under my care, was possibly colloid in its origin, but it was distinctly epithelial in its termination.

Differential Diagnosis.—With ordinary skill in examination and careful consideration of symptoms, there are not many disorders liable to be confounded with rectal cancer, yet at times considerable difficulty may be experienced in forming an accurate diagnosis. Omitting rare and exceptional diseases, the two forms of disorder most commonly mistaken for cancer are villous tumour and fibrous stricture. Villous tumour has been described in Chapter XIII.; but I may here repeat some of the features which distinguish it from malignant growth. In the first place, it differs altogether from the ordinary laminar form of malignant disease, and could only be mistaken for the fungating variety of growth; and here the duration of the disease helps somewhat in diagnosis, for when true cancer forms a fungating tumour in the rectum its course is always very rapid; whereas, on the other hand, villous tumour may remain for months, or even years, with but little change. Then the discharge differs materially in the two diseases; for in the villous tumour, though very free, it resembles thin normal mucus, being viscid and fairly clear; whereas in the fungating cancer it is of a purulent nature, darkly stained and mixed with fæcal *débris*. On examination a very different sensation is conveyed to the finger by the two disorders; the villous tumour has a peculiarly soft and velvety feel, while at the same time it gives the impression of being fairly tough and resistant. The fungating cancer, on the other hand, though soft, is very friable, so that bits readily break off on slight pressure with the finger-nail, and the least touch produces hæmorrhage, while the surface of the growth feels harsh to the finger as if from an absence of mucoid secretion. In fungating cancer, although the mass itself is soft, the walls of the bowel from which it springs are always indurated, and the bowel seems rigid and fixed—while in villous tumour the bowel is soft and moves in a normal manner on the surrounding parts. Lastly, a large villous growth may be present in the rectum with very little disturbance to the general health, which is not the case in a fungating cancer. Keeping in mind the symptoms mentioned, I have never myself experienced much difficulty in distinguishing these two diseases. On the other hand, I have occasionally had much difficulty in forming a diagnosis between fibrous and cancerous stricture. In the great majority of instances a practised finger has little difficulty in recognizing the distinction between fibrous and malignant stricture. Nevertheless, the most skilful practitioner will from time to time meet with cases where an accurate diagnosis is extremely difficult. I will therefore draw attention to a few features which I have found useful as a guide in these circumstances.

Time.—This is an exceedingly important consideration in determining the question of malignancy. Although malignant disease may be of a somewhat chronic nature, it must be remembered that when it has advanced sufficiently to produce well-marked stricture its course is comparatively rapid, and a fatal termination not far off. With a considerable experience of these cases, I know no instance of malignant disease in which the patient has survived a couple of years after the symptoms of stricture became prominent. Indeed, as a rule, the time is far less than this, the survival even for a year being very exceptional. It may be safely assumed therefore, that if well-marked symptoms of stricture have existed for a couple of years, that it is improbable that the case is one of cancer.

The following case illustrates the importance of this time element, and shows how an exceptionally careful surgeon may form an inaccurate diagnosis by omitting its consideration.

Case 92.—M. A. B.[1] was admitted into St. Bartholomew's Hospital, March, 1874.

"Three years ago, after her last confinement, she was troubled with piles, never before having had any pain or disorder of the bowel. Since that time has had increasing difficulty in passing her motions. From time to time she passed blood in small quantities. She was often seized with pain and straining during the day, sometimes ten to twenty times, after which a fluid motion passed. The motion was very seldom solid, and when so was no bigger than a pipe-stem. She had never noticed discharge of matter from the bowel, and there was no history of syphilis.

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[1] Sitwell Ward Register, vol. iii. p. 33.

"Upon examination there was seen a ring of small pale external hæmorrhoids, and the finger introduced into the bowel detected a funnel-shaped cavity leading from the anus down to a stricture situated three inches from the orifice. The rectal walls were hard, nodular and thickened. The stricture was annular, edges thick and indurated, and was so tight as not to admit the tip of the little finger. When examined by a speculum the stricture presented a ragged ulcerated edge of ashy-grey colour. After a short treatment by bougies she was discharged uncured from the hospital, and the disease was considered to be most probably malignant."

The above record I have abstracted from the excellent notes of Mr. T. Butlin, who was then Surgical Registrar. The abstract I have had by me for some time, and the case had excited my interest on account of the rareness of malignant stricture lasting so long. I could, however, obtain no further history of the case. In 1882 M. A. B. again turned up at the hospital, and being admitted I had an opportunity of examining the patient, which I need hardly say I did with considerable interest. Of course with the knowledge that the symptoms had now existed for ten years, it was absolutely certain that the case was not one of cancer. Yet I am confident that at the time of my examination a diagnosis could not have been certainly established apart from the history of the case. The parts were bathed with a foul discharge, and she had no control over the fæces, which ran partly from the anus and partly from a hole in the vagina. The parts about the posterior vaginal wall and the stricture felt hard and irregular, while the bowel was firmly fixed to the neighbouring parts. Her general condition was one of debility with emaciation, and would have corresponded well with the "cancerous cachexia." The stricture was a fibrous one, and she was greatly improved by appropriate treatment.

Another condition to which I am in the habit of attributing some weight, is the condition of the bowel between the strictured part and the anus. In stricture the result of malignant disease, this portion of the bowel is generally comparatively healthy—that is to say, the mucous membrane is soft and unulcerated. Now, in fibrous stricture these conditions are reversed; for it more frequently happens that this part of the bowel is somewhat hard and contracted; portions of its mucous membrane, instead of feeling soft and supple, are often hard and creeky, as if replaced by cicatricial tissue.

Careful examination should always be made of the inguinal glands; for although I have frequently seen cases of rectal cancer run their course without these glands being implicated, nevertheless their enlargement is often present when cancer has been some time in progress, especially when the disease is situated near the anus. The absence of glandular enlargement therefore proves nothing, but their enlargement, if present, would be of the highest diagnostic value. Again, the general weakness and malaise forming the group of symptoms known as cachexia, although by no means absent in simple stricture, frequently form a very marked feature in malignant disease. In conclusion, I believe that it is occasionally impossible to express a positive opinion as to the nature of a stricture until the case has been some weeks under careful and continuous observation.

Treatment.—In discussing the treatment of rectal cancer, the question at once arises whether the disease admits of a permanent cure. My experience is too limited to allow of a decided answer to this question. French and German surgeons of eminence have boldly asserted that it is sometimes curable, and I have seen nothing to make me doubt that such a result is impossible. When, as has already been shown, the disease is known to exhibit such different degrees of malignancy, it will be quite consistent that, while in some instances the growth is rapidly reproduced after removal, in others its return should be long delayed, or the patient altogether escape a recurrence.

At the end of this chapter are mentioned, amongst others, two cases in which I operated six and four years ago respectively. The former I know was perfectly free from the disease three years after the removal, and I have every reason to suppose is so still; while the latter is in perfect health at the present time (1884).

It is not, however, with reference merely to the cure that the treatment has to be considered, but also with a view to retarding the progress of the disease and rendering the last years of life as tolerable as possible.

Unfortunately, a large proportion of patients, either from motives of false delicacy or mistaken diagnosis, do not apply for advice until such progress has been made by the disease as to render extirpation impossible. In other cases, from the first the affection is too high up the bowel to admit of direct surgical interference.

The class of cases suitable for extirpation will be found described further on, and I will here consider what can be done to mitigate the condition of the patient when local interference is impracticable.

The most important question is: Will the operation of colotomy retard the growth or alleviate the symptoms?

In answer to this, it must be admitted that there is no evidence to prove that colotomy has any direct influence in retarding the progress of the tumour. It is a well-known physiological law, however, that disuse of a part is followed by diminished blood supply and atrophy. It is not impossible, therefore, that the lessened activity of the rectum consequent on colotomy may favourably affect the cancer by retarding its growth.

If the growth of the tumour be thus retarded, I am sure that the extent is too slight to justify colotomy on this ground alone, and it is rather from its power to alleviate the symptoms, and thus indirectly to prolong life, that the operation is to be sanctioned. Before recommending the operation of colotomy its immediate risk should be taken into consideration, and in this matter there is some divergence of opinion. Thus, during a period of eight years at Guy's and St. Bartholomew's,[1] the operation shows, according to the published statistics of the hospitals, a mortality of 66 per cent. While Mr. Allingham, in the last edition of this work, states that he has performed colotomy thirty-nine times for cancer with an immediate fatality of 13 per cent. only. After making due allowance for Mr. Allingham's exceptional experience in this operation, the great difference in the results is no doubt in some measure explained by the hospital statistics, not necessarily meaning that the patients died as the direct result of the operation, but that they died before leaving the hospital and within the year of registration. Again, it must be remembered that colotomy in a large general hospital is often performed under very adverse circumstances, patients being admitted in a nearly hopeless condition from complete intestinal obstruction.

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[1] Jacksonian Prize Essay, Cancer of Rectum, p. 136.

Mr. Reeves, with an experience that demands respect, has in one of his able papers urged that colotomy should at once be performed in every case of rectal cancer unsuitable for excision. My experience is entirely opposed to such wholesale operating, for, even on the most favourable calculation, colotomy must be regarded as an operation of gravity, not to be undertaken without carefully balancing the advantages to be expected against the risk incurred. It has been claimed that by operating early in every case the risk is diminished, and I will admit that, other things being equal, the more healthy the patient the better is the chance of recovery; but I venture to assert that by thus indiscriminately operating on every case, without regard to the nature of the symptoms, quite unnecessary operations would at times be performed. I have been consulted by patients in whom malignant disease had existed at least a twelvemonth, but yet they had been able without trouble to follow their usual avocations. One such case was a medical man, who was able to see his patients daily for at least fifteen months after the disease was first observed, and who, during that period, was little inconvenienced, the local disease having scarcely given him any trouble at all.

In this case there never was a time from beginning to end when a prudent surgeon would have advised colotomy. Nor is this an isolated instance, for I have known others in which during the whole progress of the case there never existed a single symptom to suggest that the patient would be helped by the operation.

On the other hand, there are many cases in which the advantages of colotomy cannot be overrated. But so far from regarding colotomy as an operation to be undertaken in every case, I feel that there are few questions in surgery that require more careful discrimination, and in which the responsibility of the surgeon is greater than is the selection of suitable cases, and in choosing the right time for performing colotomy in cancer of the rectum.

So long as the disease causes little pain and the patient is able to follow his avocation without much discomfort, I strongly advise against colotomy. So, too, notwithstanding that he may be growing perceptibly weaker, if the pain be slight, the discharge small, and the symptoms of stricture absent, I consider there are no indications for an operation. It must not be forgotten that the pain suffered in rectal cancer does not necessarily depend on an ulcerated surface, but may result from direct pressure on neighbouring structures, as in a case under my care at the Great Northern Hospital, in which the sacrum was partly destroyed and the sacral plexus involved by a mass of disease altogether behind the rectum. Over the former bone the skin was swollen and tender, and firm pressure was exquisitely painful. In this case the pain was extreme and obviously due to the pressure on the sacrum and nerves, a condition irremediable by colotomy.

On the other hand, it will be more commonly found that pain depends upon the irritation or inflammation of an ulcerated surface, a condition known by the increased discharge, diarrhœa, and tenesmus. In these cases, failing improvement by palliative measures, colotomy often affords great relief. Again, colotomy is most valuable when symptoms of stricture set in; it is possible that this may be kept in check by the bougie when the disease is near the anus, but failing this the remaining period of the patient's life may be prolonged and rendered comparatively comfortable by the timely performance of the operation.

In these circumstances, colotomy should not be too long delayed, for the patient will not only lose the advantages derived from the operation, but it may have to be performed subsequently for complete obstruction, under much more unfavourable circumstances.

When complete obstruction occurs, colotomy is invaluable, and is indeed the only means of averting a most distressing form of death.

Complete obstruction sometimes occurs suddenly without previous warning, see Case 89, but, generally speaking, considerable trouble is experienced in passing fæces long prior to the complete occlusion of the passage. On its occurrence it may be possible to wash away the fæculent collection by frequent injections; but after obstruction has taken place and the cause is known to be cancerous, I see no use in deferring colotomy. Possibly the obstruction might give way to a certain extent if left to time, but this rarely happens, and if it occurs the relief is only very temporary. The longer the operation for complete obstruction is delayed by so much is the chance of recovery diminished. The earlier, therefore, that colotomy be performed for complete cancerous obstruction the better for the patient.

Colotomy.—The operation of colotomy is best performed as follows:—The patient, under an anæsthetic, is placed on the table so as to lie partly on the belly, and partly on the right side, three-quarters over. A small hard pillow should be placed beneath the abdomen to press the intestine upwards and make the left flank prominent. An incision is then made in a line midway between the crest of the ilium and the last rib, commencing at the outer border of the erector spinæ, and carried transversely outwards for four inches. The position of the border of the erector spinæ is a hand's-breadth (three to four inches) from the middle line of the back. The incision is first carried through the skin and subcutaneous tissue, and then some fibres of the latissimus dorsi and external oblique are exposed, which can be divided upon a director. The aponeuroses of the internal oblique and transversalis are then exposed and divided in a similar manner. At this stage the outer border of the quadratus lumborum can be seen at the inner angle of the wound. The transversalis fascia must next be cautiously divided on a director. In making these incisions, care should be taken to carry them to the full extent of the cutaneous wound, otherwise by the time the last layer of fascia is exposed the room so much required will be unnecessarily curtailed, and the operator will be working in the apex of a triangle.

If the bowel be distended, and the patient is not very fat, it will generally bulge into the wound after division of the transversalis fascia, but if collapsed or embedded in fat, it is not so easy to find, and must be sought for by picking up with dissecting forceps successive layers of fat, and tearing them apart. The guide for the bowel is the outer border of the quadratus lumborum, while the landmark first suggested by Allingham is often very useful; namely, in a line drawn from "half an inch posterior to a point midway between the two superior spinous processes."

On the bowel being exposed, it should be cleared for an inch of its length, drawn upwards, and fastened to the cutaneous margin. The best method of fastening the bowel in position is by passing a curved needle armed with stout silk through the skin, then transfixing the bowel, and again through the skin, from below upwards, an inch from the original puncture. The silk ligature, eighteen inches long, is left *in situ*, while a similar thread is passed through the skin and bowel on the opposite side of the incision. The threads should transfix the bowel an inch apart. The bowel is then opened by a longitudinal incision with scissors between the ligatures.

By means of an aneurism needle a loop of the ligature is drawn out of the bowel. The loops are then cut and the ends tied, so that the colon is kept in position by four ligatures, forming the four corners of a square. On the bowel being opened there is generally a satisfactory escape of fluid fæcal material, but if the bowel is not distended only a little fluid may pass; after the patient has been turned over and put to bed, fæces will soon find their way through the wound. For the first few days the flow is nearly constant, the patient requiring to be frequently changed; but after a while periodicity gradually becomes established, and the bowels are only moved once or twice daily. The condition of the patient, after recovering from the operation, is mentioned on page 251.

The operation is often difficult in a very fat person, owing to the depth from the surface at which the colon lies. I once helped Mr. Tom Smith in a case in which I am sure the bowel from this cause must have been four or five inches from the surface. In this case the difficulty was overcome by considerably increasing the length of the superficial incision. Another trouble that I have experienced is in recognizing the transversalis fascia. It often both looks and feels very like the peritoneum, but by following it a little way towards the inner part of the wound, the absence of the reduplicated border generally shows that it is not the peritoneum. The peritoneum is best avoided by keeping away from the outer angle of the wound. When the colon is empty and cannot be found, Mr. Curling has brought it into view by injecting water or gruel up the rectum, and the suggestion is a valuable one. After every care has been taken, and the most patient and persevering search made to find the bowel, occasionally the most experienced operator will fail to do so. I have twice been present when the bowel could not be found, and once assisted at an operation when the duodenum was opened by mistake. In two of these cases the cause of failure was discovered by post-mortem examination, and in both of them it was found that the colon was abnormal, and could not possibly have been reached from the lumbar wound.

For further details of two of these cases I would refer the reader to a valuable paper[1] by Mr. Lockwood, in the nineteenth volume of St. Bartholomew's Hospital Reports. The operation of inguinal colotomy is described on page 46.

It has been suggested by Kelsey, in one of his able papers,[2] that instead of colotomy a free posterior proctotomy, so as to divide the strictured bowel, might be performed. In rare cases, when the obstruction is close to the anus, the operation might be right; and in the single case[3] in which I have seen it performed some temporary benefit followed. But should the disease be at the usual height the difficulty of dealing with any hæmorrhage from the rotten tissue would be an element of considerable danger, while the relief could only be but temporary.

In one case,[4] in which the disease close to the anus grew into a large cauliflower mass, which threatened completely to occlude the bowel, I thoroughly scooped away all the soft growth with a blunt elevator down to its hard base. This was very easily accomplished under chloroform without much bleeding, and the result for a time was highly beneficial to the patient, enabling the motions to pass with ease.

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[1] Abnormality of the Colon, a Cause of unsuccessful Colotomy, by C. B. Lockwood.

[2] New York Med. Journ., June 1880.

[3] Lucas Ward Reg., vol. viii. p. 300.

[4] Jacksonian Essay, p. 187.

Palliative Treatment.—If an operation is considered unadvisable, or has been declined, something may yet be done to alleviate the patient's condition.

Diet is important, and requires careful attention. It should be of a nourishing description, and taken as far as possible in a concentrated form, in order to diminish the amount of fæcal material. If the bowel be very irritable, I have frequently seen much temporary benefit follow a pure milk diet. I have also tried Valentine's meat juice, in conjunction with the milk, with some advantage.

So far as medicines are concerned, at present I know none that have any direct effect upon the cancer. Lately, I have been trying the local application of salicylic acid (ʒss to ℥j of ung. petrolii), but cannot yet say whether it has any effect in retarding the growth. Chian turpentine I have given a thorough trial, but am sorry to say that in my hands it has not proved of the slightest service. If it agrees with the patient, a dessert-spoonful of cod-liver oil three times daily I have fancied retards the emaciation, while it certainly renders the motions easier. With patients who cannot take the oil, some light mineral acid tonic may be prescribed, such as the nitro-hydrochloric acid (♏x) with a little tincture and syrup of orange-peel twice daily.

Purgative medicines must be avoided, for they may set up a violent diarrhœa difficult to control;

while if administered for symptoms of obstruction, they are positively dangerous. I have seen at least one death after colotomy which was chiefly due to violent purging setting in after operation, caused by the large doses of medicine previously administered.

There is no objection to the patient taking, if necessary, some mild laxative, such as a small quantity of Friedrichshalle water, or a small dose of liquorice powder; but the constipation is most commonly mechanical, and due to a difficulty in passing motions through a narrow gut, and should therefore be treated by careful oil-and-water injections.

Wind, often a troublesome symptom, may be relieved by charcoal or by bismuth and turpentine. Of the former, a teaspoonful spread on bread-and-butter may be tried two or three times a day; while the latter may be prescribed thus:—

Olei terebinthinæ, ♏xv.
Liq. bismuthi, ʒss.
Mucilag. acaciæ, ʒij.
Aqua carui, ℥j.
Two or three times daily.

When the nights become restless and the pain considerable, opium is a valuable drug. Its use should be deferred as long as possible, for once commenced it must be continued, and that too in increasing doses. In one case which I attended with Dr. Platt, of Kilburn, during the last few months of life the patient was taking daily the equivalent of 50 grains of opium.

Patients in a position to do so should be encouraged to take a fair amount of exercise, unless they notice that such a course clearly aggravates the symptoms.

The venous circulation being so much assisted by movement in the surrounding parts probably explains why pain and discomfort is often less after a day of moderate exercise than one in which the patient has lain completely at rest. If, however, the disease implicates or protrudes from the anus, exercise can scarcely be borne from the irritation it produces.

The local treatment is important. The parts must be kept scrupulously clean, great care being taken to prevent the collection of acrid discharges about the anus. The part should be frequently washed with soap and water, thoroughly dried with a soft towel and dusted with oxide of zinc and starch powder (pulv. zinci oxidi gr. x, pulv. amyli ʒij). A small pad of prepared charpie kept in place by a T bandage enables the patient to get about without soiling the linen.

The diarrhœa and tenesmus, so troublesome a symptom in the later stages, is often due to the retention of fæcal material above the disease, its presence producing congestion and irritability of the ulcerated part. In these cases great comfort and relief follows the use of a good oil-and-water enemata night and morning; it clears the bowel above the disease and thus removes a potent source of irritation. To be of use this must be done very thoroughly. I often find, unless special instructions be given, that the injection is merely passed into the anus, dilating the rectum below the disease without removing the matter above. To be effective, a Higginson syringe should be attached to the half of a No. 8 black soft catheter, with an eye near the point. The catheter should then be gently passed up the bowel beyond the disease. After the bowel has been cleaned in this way, an injection (to be retained) of an ounce of warm thin starch, to which twenty drops of liquor opii sedativi has been added, is very soothing. This must also be injected through a soft catheter with a glass syringe.

I have already stated my view as to the propriety of colotomy when stricture occurs, but if refused, in some cases the stricture can be prevented from increasing by the careful use of conical bougies. I have seen a rapidly advancing stricture not only arrested but the passage dilated from No. 4 to No. 8, which was maintained without difficulty up to the time of death, the patient having no further trouble from obstruction.

Treatment by Excision.—The name of Lisfranc stands prominently forward amongst the earlier advocates for treatment of rectal cancer by extirpation. The operation had been previously mentioned by Morgagni, and performed by Faget. During the earlier portion of the present century Pinault published some remarks on the subject, but the able paper read by Lisfranc before the Académie Royale de Médecine, March 24, 1830, together with Dieffenbach's[1] many successful cases, were without doubt the leading causes which established the treatment of rectal cancer by extirpation in modern surgery. Some six or seven years later Velpeau described the operation, with some ingenious modifications, and gave the result of an extensive personal experience. About the same time Recamier's operations were published by Massé. In the year 1854

[1] Die operative Chirurgie, Leipzig, 1845.

Chassaignac employed the écraseur. Maisonneuve in 1860, and Fumouze, Nussbaum, and Schuh later, are also well-known modern authors on the subject. There is a complete and carefully written work on the operation by Marchand, who, taking advantage of previous researches and his own experience, published an interesting work in 1872. In America Roberts,[1] Briddon and Kelsey[2] have done much towards establishing the operation on a sound footing. While in this country we are indebted to Sir James Paget, Mr. Jordan, Mr. Holt, Mr. Allingham, Mr. Gay, Mr. Holmes, Mr. Morrant Baker and others, for reviving an operation which had long fallen into discredit amongst English surgeons. The cause of the operation having fallen into disuse, and the severe way in which it has been condemned by surgeons of eminence, is not far to seek, and there is little doubt but that it will again fall into discredit if regarded as the ordinary treatment for rectal cancer. It is of no avail to show that anatomy will allow and that there may be theoretically carried out a surgical operation, unless it can be further proved that in the majority of cases such an operation has been followed by beneficial results. There is scarcely an operation upon the human body which is not liable to be abused by the ignorant or enthusiastic, although in the hands of a discreet surgeon of the utmost value to the sufferer. It requires the most careful selection to choose cases of malignant rectal disease in which benefit is likely to result from its removal. Unfortunately, the cases which admit of extirpation, are comparatively rare, and I am of opinion that they do not amount to more than from 10 to 20 per cent. of all the cases of rectal cancer that come under observation.

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[1] Excision of Rectum for Cancer, Philadelphia Med. Soc., June 1877.

[2] An Analysis of 140 Cases of Excision of Rectum, New York Med. Jour., December 1880.

In dealing with cancer it can be said with little hesitation that no operation should be undertaken without a reasonable prospect of its being possible to remove the whole disease. To determine whether this be possible or not, the rectum should be thoroughly examined by the finger, and this examination is much facilitated by an anæsthetic, the bowel being previously washed out. Under ordinary circumstances the finger can explore to a distance of from four to five inches. If the patient be told to strain down or the abdomen pressed with the hand, a slightly further distance of bowel can be reached. If at this examination the finger fairly pass beyond the disease in an upward direction, the next point to be ascertained will be the implication of the surrounding tissues, and the extent to which the disease has formed adhesions to the neighbouring parts. If the whole circumference of the bowel be involved, it will be found that it is attached more or less firmly to the surrounding structures, especially on its anterior aspect, which even in a healthy rectum is closely connected to the prostate, vagina, or uterus. It is of great importance to ascertain with some precision the extent to which the structures named are implicated. In the male, although the disease may be situated in that portion of the bowel in contact with the prostate, it is a long while before the prostate itself becomes infected; in women, on the contrary, when the disease is on the anterior part of the bowel, the vagina and uterus quickly become implicated. So long, however, as the vaginal mucous membrane remains free, it is possible to dissect the anterior wall of the rectum from the vagina without making an opening into the latter. If the disease is adherent to the upper portion of the vagina in the immediate vicinity of the uterus, the peritoneal membrane of Douglas's pouch is sure to be drawn towards the disease which then cannot be removed without opening the peritoneal membrane. In these circumstances, it is better that no operation should be undertaken; not so much on account of the necessary opening of the peritoneal cavity, as because the disease, once having implicated this membrane, is nearly sure to have spread in the course of the lymph-paths beyond the reach of complete removal. It is well to remember in the female how near to the perinæum the peritoneal membrane descends, it being much more commonly at a shorter distance than three inches than at a distance in excess of that measurement. In the male, however, three and a half to four inches from the anus is the common site for the reflection of the peritoneal membrane.

If the disease is confined to the posterior wall, the case is in every respect more favourable for the operation than when situated in front. In this situation there are no anatomical difficulties to prevent the thorough removal of disease to the extent of four to four and a half inches, care being taken to ascertain, if possible, whether the coccygeal or sacral glands are involved. As a rule, glandular infiltration comes on somewhat late; if it is extensive, hard nodular masses lying behind the rectal wall can be felt.

To sum up briefly the general outline of the cases suitable for operation, I should say that the disease must be within four inches of the anus, and in women must not have extended on the anterior wall further than three inches, that the rectum must be fairly movable on the neighbouring parts, and there must be no sign of hepatic infection. Each case will, however, have to be decided upon its own merits, after due consideration has been given to the surrounding circumstances. The distances just mentioned, must only be considered as approximate.

Various methods of operating have been proposed. I have employed two methods, the one by ligature, the other by the knife and écraseur or scissors. The first case in which I removed a portion of rectum was in 1875. The portion was quite the lower part of the bowel, certainly not more than two inches; the plan followed was similar to the one described by Maisonneuve and called by him Procédé de la ligature extemporanée.

The advantage claimed for the operation is that it can be performed without hæmorrhage, but since hæmorrhage is not one of the difficulties in rectal extirpation, I consider it has nothing to recommend it, and that it is vastly inferior to the operation as performed by the knife and wire écraseur.

The operation which I now perform is the result of many small improvements in the original operation as performed by Lisfranc, the most important being the posterior incision of Denonvillier. It is thus performed:—The patient, being prepared for the operation by a purgative and warm water enema, is placed fully under the influence of an anæsthetic and arranged in the lithotomy position, the legs being drawn up and fixed upon the abdomen by Clover's crutch. This consists of a metal bar eighteen inches in length, at each end of which is a semicircular padded crutch, with a strap and buckle attached. The legs being flexed on the thighs, the bar is placed between them, so that the crutches fit against the legs just below the knee, and are kept in position by means of the straps and buckles. The thighs are then bent on the abdomen and a soft leather strap passes over the head and one shoulder, and the free ends being then buckled to the crutch, the strap is then tightened so as firmly to fix the thighs in a bent position. The instruments required for the operation consist of a strong, curved, sharp-pointed bistoury, a straight bistoury, a pair of blunt-pointed scissors, a pair of strong curved scissors, two pairs of large, strong, vulsellum forceps, a steel-wire écraseur, the benzoline cautery, artery forceps, and ligatures. The left forefinger being passed into the rectum, feels for the tip of the coccyx, the curved bistoury, held in the right hand, is passed into the bowel, the point being guarded by the finger-nail; the handle of the knife is then raised, and, with a little jerk, the point is made to protrude through the skin on a level with the tip of the coccyx and exactly in the middle line. The whole of the intervening tissue between this part and the margin of the anus is cut through. If this cut be made with a clean sweep, as near as possible in the middle line, little hæmorrhage will result. The left hand of the operator is now placed on the right side of the buttock, so as to draw the anus outwards and stretch the tissues at the line of junction of the mucous membrane with the skin. The portion of the rectum or anus through which the lateral incision is to be made must depend upon the distance from the anus of the lower margin of the disease, and, if possible, should be at least half an inch from the growth. The point being selected, the knife is made to cut deeply by using firm pressure, a crescentic incision extending from the margin of the first cut round the anus to a point in the middle of the anterior margin. This cut should be made boldly, and of sufficient depth to extend well into the fat of the ischio-rectal fossa. The forefinger thrust into this incision will readily separate the bowel from the surrounding tissue, except at the insertion of the levator ani, which should be divided with scissors. A small piece of sponge, pressed into this cut, and held by an assistant, restrains any bleeding, while the opposite side is treated in a similar manner. The lateral and posterior portion of the bowel being freed from their attachments, the next and most delicate step in the operation is the separation of the bowel from its anterior connections. In the case of a man this is much facilitated by having a full-sized catheter passed into the bladder and held during the operation, like the sound in lithotomy. The catheter can be readily felt during the operation, and prevents any chance of the urethra being wounded. The separation of the anterior wall requires the judicious use of the knife and scissors, it being too intimately adherent to be separated by the finger-nail without greatly tearing the parts. During this dissection the bowel should be drawn downwards and backwards by the left hand, while the finger should from time to time be introduced into the bowel cavity to make sure that the dissection be not carried too close to the bowel. When the dissection has been carried to a sufficient distance beyond the disease, the bowel should be drawn down with a moderate amount of force with vulsellum forceps. The wire loop of the écraseur is then passed over the forceps and detached bowel, and pushed up as far as possible before being tightened.

The wire is preferable to the chain écraseur; it is more easily worked and less liable to get out of order. The wire should consist of eight strands of moderate thickness, only slightly twisted together with great evenness. If too much or irregularly twisted, the wire will stretch, and the strands are liable to break by cutting one against another.

After the diseased portion of the bowel has been slowly cut through and removed, any vessels that happen to bleed should be secured by ligature. If preferred, instead of using the écraseur the bowel may be finally detached by means of strong curved scissors. The hæmorrhage varies a good deal in different cases. It is nearly always free, but seldom, so far as I have seen, to a dangerous extent. It is best treated by making the posterior and two lateral incisions as boldly and rapidly as possible, and not attempting to tie any vessel until the posterior and lateral connections of the bowel have been separated. The bleeding vessels are mostly situated in the coats of the bowel, so that when the partially detached bowel can be grasped in the left hand, nearly all hæmorrhage is restrained. The vessels in the partially detached portion of the bowel will again, in the latter part of the operation, be cut across higher up, so that to ligature them in the first stage of the operation only wastes time. Should any vessel in the sides of the wound bleed it may be secured. There is, however, little bleeding, except in the bowel itself. This, no doubt, is due to the lower part of the bowel being supplied by the branches of the middle hæmorrhoidal which run down between the coats. There is always considerable oozing after the diseased portion has been detached, but this is principally venous, and stops when the body is put out of the lithotomy position. The ends of any ligatures used should be cut off short. The hæmorrhage having been attended to, the parts should be carefully examined by the finger, to make sure that no portion of the disease remains behind. For this reason I dislike the use of any form of cautery during the operation, for after its use it is exceedingly difficult to distinguish between the hard nodules of burnt tissue and portions of the disease left behind.

The operation, as just described, is for the removal of the whole circumference of the bowel. Cases, however, will occur in which the disease affects only a small part of the circumference, and in such cases it is not necessary to remove the whole bowel. So far as the operation itself is concerned, it is certainly easier to remove the whole circumference of the bowel than a portion only, but since one of the chief troubles following the operation is contraction of the outlet, and this contraction rarely occurs to an inconvenient extent, unless the whole circumference has been removed, it will be seen that if any considerable portion of the bowel be quite free from disease it may be left with advantage. In these circumstances the operation requires a slight modification of the method just described. In any case, even if the disease be situated in the middle of the posterior wall, the preliminary incision backwards is advantageous, greatly facilitating the operation.

If the diseased tissue be confined to the lateral portion of the bowel on either side, the semicircular incision round the anal margin is made only on the diseased side. A strong, blunt-pointed, slightly curved needle, four inches in length, armed with strong string, is then thrust in at the upper angle of the curved lateral incision, at a point opposite the posterior preliminary incision, or further round if the disease has encroached at all on the anterior wall. The needle is made to traverse the tissues external to the muscular coat of the bowel to a sufficient height, and the point, guided by the finger in the rectum, is thrust through the coats into the cavity of the bowel. The loop of string thus passed through is seized by the finger or forceps, the loop being drawn out at the anus, while the needle is withdrawn through the hole at which it entered. By means of this loop one end of an écraseur wire is drawn back into the bowel and out again at the puncture made by the needle. This, together with the other end of the wire which hangs out of the rectum, are fixed to the écraseur, and the intervening tissues cut through. The strip of bowel between the posterior incision and the one just made by the écraseur can now be separated by the finger from its lateral connections, the separation, of course, commencing from the semilunar incision round the anus. In this way the rectangular flap of bowel in which the disease is situated is detached from the surrounding connections, except at its upper margin. It is then drawn down and cut off by the écraseur or scissors. It can be readily understood how the steps of this operation must depend upon the portion of bowel in which the disease is situated. If it be in the middle line behind, the disease, or a portion of it, will probably have been split in two by the first incision, in which case a strip of bowel must be removed on either side; or again, if it be on the anterior wall, the écraseur wire will have to be twice passed by the thread and needle, once on each side of the disease, or instead of the écraseur all the cutting can be done with scissors if preferred.

In the case of women the dissection of the anterior wall is best accomplished by keeping as close as possible to the vaginal mucous membrane, the dissection being carried through the loose submucous coat. Further details of the operation will be found in the cases at the end of this chapter.

Any attempt to draw down the cut end of the bowel and stitch it to the anal margin is perfectly useless; the stitches are sure to give way, and before they do so prevent a free discharge from the wound by forming spaces in which matter may collect and decompose. It is for the same reason that I employ no plugs or dressings. Anything that can in the least impede or cause the discharge to collect is a source of danger. I place a large sponge covered by a single piece of oiled lint against the wound, keeping it in position by a T bandage. This sponge, by affording gentle support to the parts, restrains the oozing. With this same object I let the patient lie on his side for the first thirty-six hours. The sponge can be then gently removed, and the parts lightly syringed with warm Condy lotion. On the third day the discharge becomes considerable.

The patient should lie on his back, part of the day, the knees being bent and supported by pillows. In this position there is free drainage from the wound. A circular air cushion beneath the buttocks is comfortable for the patient. There is little pain after the operation, so that opium is not necessary unless the patient be irritable. The wound should be gently, but very thoroughly, syringed out by means of Higginson's syringe with a warm Condy lotion. Great care should be taken that the syringe be introduced well into the wound, so that every part be thoroughly washed, and all blood-clot removed and deodorized. This proceeding may be repeated twice a day. All fluids and secretions are prone very quickly to decompose in this neighbourhood, and the proximity of the peritoneum, and the free supply of absorbents in this part of the body, render the absorption of putrid material peculiarly dangerous. My experience is at present too limited to state the fact with certainty, but I think that it will eventually be found that the liability to peritonitis is in direct proportion to the extent to which the products of putrefaction are allowed to accumulate. Unfortunately, it is scarcely possible in operations about the rectum strictly to carry out Professor Lister's antiseptic treatment, but every care should be taken to exclude, as far as possible, the chance of septic infection from without. The patient usually convalesces rapidly, and can leave his bed in three weeks or a month.

Condition of the Rectum after Operation.—The cut end of the bowel quickly forms attachments to the sides of the cavity that remain as the result of the operation, and seems during the process of cicatrization to be drawn considerably downwards, so that if three inches of the bowel have been removed, and the parts are examined six months later, it will not be found that the gut terminates three inches above the external orifice, but at a distance of one to two inches from it, and that the lining of the canal for the remainder of the distance is composed of a tissue similar to the ordinary scar tissue found on cutaneous surfaces, but of a softer consistency. This tissue has sometimes a great tendency to contract, thus narrowing considerably the outlet. If, however, the whole circumference of the bowel has not been removed, and a strip of the normal mucous membrane, however narrow, has been left extending to the anal margin, the tendency to contract is greatly diminished; and for this reason, when the disease affects only a portion of the bowel, it may be well not to remove the whole circumference.

It might be supposed that the destruction of the internal sphincter, and at the same time more or less damage to the external muscle, would be followed by an incontinence of fæces. In my Jacksonian Essay, out of thirty-six cases recorded defecation was normal in twenty-three instances, while fæces could be retained, when not too fluid, in six cases, incontinence resulting in seven instances only. My own experience is quite in accordance with these facts. In all cases, after operation, there is at first complete incontinence, and the patient loses all consciousness of the passage of fæces, but as convalescence advances control returns. In those instances where portions of the sphincter have been left intact, the muscle, temporarily paralyzed, probably regains its power, but when the sphincter has been wholly removed retention of fæces requires another explanation. Chassaignac attributed it to an hypertrophy of the circular fibres around the termination of the cut margin, constituting a sort of rudimentary sphincter. Lisfranc considered that it depended most probably on the somewhat narrow, tortuous course through the cicatrix, assisted by the surrounding muscles: and in the Bulletin of the Société de Chirurgerie of 1861 an interesting discussion on this subject will be found. In the majority of cases it does not appear that hypertrophy of the circular fibres has anything to do with the power of retention, nor in cases that I have examined has any such hypertrophy been found. The common plan by which the passage of fæces appears to be prevented will be best gathered from a description of M. A.'s[1] case, whose rectum I have frequently examined since the removal of two inches and three-quarters of bowel. She is able to retain both wind and motions, as a rule, completely, but if she has any diarrhœa the linen is slightly stained. Upon separating the sides of the buttocks the anal aperture appears as an oval opening in the skin, one inch long by three-quarters wide. The margin of the opening is formed by a slight inversion of the skin. The edge is not hard, and admits of a certain amount of stretching; just within the orifice of the skin is seen a bright red protrusion, which upon examination is found to be a sort of prolapse of one side of the bowel, completely blocking up the opening. Very slight pressure enables the finger to pass into the bowel. This valve-like approximation of the sides of the bowel would appear to be but a feeble guard against the passage of fæces, but nevertheless in practice it is completely efficacious.

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[1] Case 95, p. 401.

It is probable in discussing this question of incontinence that sufficient consideration is not given to the normal method by which fæces pass from the bowel. It must not be supposed that there is always a mass of material just within the sphincter ready to pass away directly its grasp is relaxed. In health, unless the bowels be very loose, a certain amount of straining by means of the abdominal muscles is necessary to bring the fæces against the sphincter, which eventually yields to the pressure, so that during the greater portion of the day the last few inches of the rectum is empty.

Prognosis.—The natural course of the disease when allowed uninterruptedly to advance has already been referred to on page 346. The results to be expected from the operation of excision of the rectum may be considered under the following heads :—

1. The immediate risk to life from the operation.

2. The probable amount of life to be gained by the operation.

3. The conditions under which such life is acceptable.

1. The great difficulty of estimating with exactness the relative mortality following operations of an exceptional nature is notorious. The surgeon has every inducement to publish those cases in which success has been obtained. There is a natural increase of interest in beneficial results, and a natural inclination to give greater prominence to operations followed by complete or partial recovery. When cases are principally drawn from authors who publish the whole of their experience, this objection is in a great measure obviated, and data sufficiently reliable for comparison may be obtained. In the Tables appended to the Jacksonian Essay no doubt a few of the cases are mere isolated records of success, but it will be found that the majority represent the whole experience of reliable authors. On these grounds it is probable that the mortality record is fairly reliable.

Out of a total of 53 cases . { 44 recovered,
{ 9 died,

giving a mortality of about 17 per cent.

In my own experience[1] of { 19 recovered,
23 cases . . . . { 4 died,

which closely tallies with the numbers just given.

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[1] Cases in which I have operated or assisted at the operation. In eleven instances I operated myself, in the remaining twelve I assisted. Without claiming any greater merit than belongs to good fortune, I have been hitherto sufficiently fortunate to lose no patient from the operation itself, unless I include an unfortunate case, at the Royal Free Hospital, in which death took place from chloroform before the first incisions had been completed.

The causes of death in the nine cases mentioned in the Jacksonian Essay were as follows :—

Peritonitis	5	6
Cellulitis	1	
Erysipelas		1
Pyæmia		1
Not stated		1
		9

The cause of death in the second series of cases :—

Died of peritonitis	2
Died from the shock	1
Suppuration and exhaustion	1
	4

The frequency of peritonitis at once attracts attention. In three of these cases the peritoneum was known to have been opened, while in the other case more than three inches of bowel had been removed. The danger of this accident must necessarily be in proportion to the height of bowel removed, and not only might the risk be reduced by a more careful selection of cases, but also by a more careful attention to the subsequent treatment.

2. In calculating the gain to life from this operation, not only must be considered those fortunate few who escape recurrence, but also the longer or shorter time free from disease which the majority of the sufferers enjoy before a second manifestation of the disorder appears.

In the Jacksonian Essay forty-four cases of recovery from the operation are recorded. The subsequent history is not stated in sixteen of these cases: the results are given for the remaining twenty-eight; three of these were deducted, from the nature of the disease being doubtful. Of the remaining twenty-five cases no recurrence had taken place in eleven instances, after intervals varying from a few months to some years. In three of the cases over four years had elapsed without recurrence. In the remaining fourteen cases recurrence took place after intervals varying from four months to three years. In some of these the recurrence was of a very trivial nature, and was easily removed by a second operation, while in others the patients died of general cancerous cachexia.

My own experience is as follows:—Of the nineteen cases that survived, in nine the disease returned between four months and two years after the operation; of the remaining ten, I know six to have been well at periods of two to four years after the operation. One of these cases (95, page 401) is very instructive, showing the value of a second operation on the disease recurring.

There can be very little doubt that if the patient survives the operation, his life will be considerably prolonged, for it is the pain and distress of the local disease that so hastens the death of the patient; and further, however few the cases may be, it is always possible to give a prognosis that years may elapse before the return of the disease, or possibly that the case may result in a permanent cure.

3. The most distressing symptom of rectal cancer

is pain at the seat of the disease. This pain is in no proportion to the extent of the growth, and, indeed, is often more intolerable from a small cancerous ulceration involving the sphincter than from extensive disease in the higher part of the rectum. Complete relief from this pain is the first and most marked result of the operation. Indeed, the patient will often state on the morning following the operation that a better night has been passed than for months previously.

With the removal of the disease not only is there cessation of pain, but also the tenesmus and blood-stained discharge ceases, and the patient rapidly improves in general health and strength. If the disease return in distant organs the suffering is usually inconsiderable, while in the event of a local return there appears to be very little pain compared with that caused by the original growth, a fact probably accounted for by the destruction of the terminal nerve-filaments at the seat of operation. The possibility of incontinence cannot be urged as a drawback to the operation, for if the cancer be allowed to remain unoperated upon, incontinence is nearly sure to become a complication. Contraction of the outlet of the bowel sometimes occurs. In two of my cases this caused much trouble. This contraction can to some extent be prevented by keeping a hollow ivory plug in the wound during the process of cicatrization. Moveover, it only takes place in a certain proportion of cases, but when it occurs it is undoubtedly a source of great trouble; but here again we have to compare the strictured condition, not with a healthy rectum, but with the state of the diseased part before the operation was undertaken.

If the contraction becomes serious and cannot be overcome by local means, colotomy may be performed, after which the patient is certainly in a better condition than if the local disease had been allowed to grow unchecked.

In conclusion, while recognizing the operation as unsuitable in a large number of instances, I have the strongest conviction, in carefully selected cases, that partial excision of the rectum for cancer is of the utmost benefit to the sufferer, and should be regarded as a most valuable resource in an otherwise hopeless disease.

CASES.—It would occupy too much space to record all the cases mentioned on page 397, nor do I think much advantage would be gained by such tedious repetition. The real interest in such cases lies in their subsequent histories, so that I will only follow up the history of cases already published, or in which an interval of at least four years has elapsed since the date of operation.

Case 95.—M. A., aged 61, being kindly sent to me by my friend Mr. Doran, was admitted under my care at the Great Northern Hospital in April 1878. She was very thin and emaciated, and for some time had been unable to follow her occupation as a laundress. For more than a year she had suffered discomfort in the rectum, and had lost blood from time to time, a muco-purulent discharge being persistent. During the last few months the pain had greatly increased, her nights were sleepless, she was tormented with a constant desire to go to stool. She suffered from alternate attacks of diarrhœa and constipation, and could not retain her fæces when liquid. On examination with the finger, commencing just within the anus and extending upwards a couple of inches, an ulcerated mass of cancer was felt. This did not completely surround the bowel, a small portion of the anterior wall being free. The patient being placed under chloroform, and in the lithotomy position, a curved bistoury, guided by the finger, was introduced into the rectum, the point then thrust through the posterior rectal wall, and made to emerge at the tip of the coccyx; the tissues intervening between this point and the margin of the anus were cut through with a clean sweep. The sides of the wound were held apart by the folds of the nates being forcibly drawn outwards, and a semilunar incision was made from the first cut; this, the second incision, was just within the margin of the anus, and extended round the bowel, while in depth the point of the knife was carried well into the fat of the ischio-rectal fossa. The lateral and posterior attachments of the bowel were separated by the forefinger with the sparing use of the cautery and the knife. The dissection of the anterior wall was made more carefully, and entirely with the knife, a narrow strip of sound mucous membrane being left undetached on the right side of the middle line. The free portion of the bowel was now seized and drawn down with a moderate amount of force, and cut through just above the disease by means of the benzoline cautery. No attempt was made to draw down the bowel, neither were any sutures or dressings used. The patient made a quick recovery, leaving the hospital in five weeks, free from all pain, with some control over her motions, and her general health greatly improved. She subsequently came to my out-patient room once in every fortnight, on which occasions the bowel was carefully examined. All seemed well for the first three months. She then complained of a slight irritation of the part. Upon examination, at a spot on the strip of the mucous membrane that had been left, the membrane looked rather more vascular than normal, and seemed to be slightly raised above the surrounding level. Incautiously something was said about a further operation being necessary, and the patient, a nervous woman, ceased to attend for six weeks. She then attended again, frightened by passing blood with her motions. I found at the spot that had previously looked suspicious a beautifully round papillary growth, about the size of a large pea. It projected into the rectal cavity and felt soft, but when taken between the finger and the thumb could be felt to have somewhat of a hard base. The little growth, including its base, was seized by a pair of vulsellum forceps, drawn down, and cut out with scissors. The wound healed quickly. The patient remained perfectly well for fourteen months; at that time she felt no pain, but her attention was again drawn to the part by a little blood in her motions. I found that the blood proceeded from a minute speck of red granulation-looking material, certainly not larger than a millet-seed, which projected through a tiny hole in the cicatrix that was left by the second operation. By placing the thumb in the vagina and the forefinger in the rectum, a little tumour, of about a quarter of an inch in diameter, could be distinctly felt in the recto-vaginal septum. The mucous membrane of the vagina was freely movable over the nodule, which was firmly connected with the cicatrix on the rectal surface. This tumour was removed, and the woman called at my house every six months during the next two years. I examined her carefully on each occasion. There was no sign of any further recurrence. She gained flesh, had no pain, and had perfect control over her motions, except when fluid. The only trouble she complained of was occasionally some prolapse of the bowel. Upon my last seeing the patient, about four years after the operation, she promised to call and see me if at any time she had further symptoms.

Case 96.—The patient, aged 59, had suffered from hæmorrhage and pain from the rectum for over a year. Latterly he had been getting considerably thinner, and the pain was much increased. He was tormented with a constant desire to go to stool, and was unable to follow his occupation. The skin round the margin of the anus was red and slightly œdematous, but otherwise seemed healthy. There was a considerable discharge of muco-purulent matter, with a highly offensive odour. This discharge was generally streaked with blood. Upon examination of the rectum with the finger, a proceeding which was exceedingly painful, a mass of disease was found in the posterior wall of the rectum. The disease felt like a raised excavated ulcer, the base being firm, thick and hard, while the margins were considerably raised above the level of the surrounding membrane, the edge slightly overhanging the healthy membrane. The diseased portion was oval in form, its long diameter an inch and three-quarters, its small diameter an inch and a half. Its lower border was about an inch and a half from the anus, and its upper border was at a distance of three inches. The disease occupied the posterior half of the rectum, the anterior portion being healthy and movable. The base of the diseased portion was rather firmly attached to the tissues behind it. It was decided to remove this growth by operation, which was done by Sir James Paget in 1876, who kindly asked me to assist him.

The patient convalesced in the most satisfactory manner without any trouble save that he could not hold his motions. At the end of three weeks he was about his room. Three months later he was entirely free from all pain, and gained much in weight and strength, and was able to resume his daily occupation without inconvenience, the power over the motions having greatly improved. Three years after the operation he was in good health, and suffered no pain. He had complete control over the fæces save when there was a tendency to diarrhœa, when the linen was a little stained.

Dr. Webb, of Maida Vale, informed me that this patient died in 1882 from cancer of the liver and mesentery; the rectum "remaining pervious to the end."

Case 97.—R. S., aged 65, admitted into the Royal Free Hospital, 1878. Mother lived to age of eighty-five. Father said to have died of consumption. Two brothers died at the age of twenty from consumption, also a sister, rather older, of the same disease. No history of cancer in the family; has seven children living, in good health, and has lost none. The patient was brought up in the country, but has lived in London for the last forty years, and has worked as a plumber all that time. He has never suffered from lead poisoning or any other form of illness, always having good health up to the spring of 1878. He then noticed that he passed blood and slime with his motions, and was troubled with a frequent desire to go to the closet. Gradually defecation became painful and difficult, and he rapidly lost strength and appetite, suffering much from nausea. His complexion became pallid and yellow. He kept to his work till admitted into the hospital late in the year. When admitted the suffering was very great, especially at night.

Upon examination, the anus appeared healthy, with the exception of a small œdematous fold of skin. The disease could be plainly felt by the finger occupying the whole circumference of the rectum, its lower margin being an inch and a quarter from the anus, while its upper limit was at a distance of three and a half inches. The growth felt like an ulcer having a firm, hard base, with overhanging raised edges. From the left upper part of the ulcer a considerable mass of soft, fungating growth projected into the rectum. By a little pushing the finger passed beyond the disease, and the bowel felt soft and healthy. The patient being thoroughly under ether and in the lithotomy position, assisted by my colleague, Mr. William Rose, I removed the lower three inches and a half of bowel. The patient convalesced without accident, and left the hospital at the end of a month. Great attention, as usual, was paid to cleanliness of the wound, which was thoroughly syringed out with weak carbolic lotion. On his leaving the hospital there was some contraction of the outlet of the bowel, but the forefinger could be passed without difficulty. He was supplied with a short bougie, and directed to use it daily, and to present himself for examination at the end of a week. This, however, he neglected to do, and was not seen for two months. He then presented himself, complaining of some difficulty in passing his motions, but otherwise in no pain. Upon examination, the outlet of the bowel was much narrowed, and would not at first admit the forefinger, but with a little manipulation the obstruction gave way and admitted the finger readily enough. The patient was directed to use the bougie daily. This he continued to do for three months, the contraction not increasing, and he could pass his motions in comfort. At this time all the parts were comfortable, with no sign of a return of the disease. Some months later the patient gave up the use of the bougie, and the contraction formed a well-marked annular ring close to the anus. Symptoms of complete obstruction coming on, I went to see the poor fellow in his cottage; the contraction after some trouble would just admit the little finger, and by frequent washing with warm water injections I removed an enormous amount of fæcal collection. I strongly advised the patient to go into the hospital to have the stricture treated. He however refused, and died three weeks later with constant vomiting from complete obstruction, absolutely refusing to have anything done for his relief.

Case 98.—A. G., aged 54, a small emaciated woman, with a dark complexion, was admitted into the Royal Free Hospital, November 7. She had six children living, in good health, and has lost none. The father and mother died at advanced ages; there was no family history of tumours or phthisis. The patient had good health until two years ago, but has always been subject to constipation, for which she has taken castor-oil in considerable quantities. Two years ago, she began to suffer from pain and a feeling of weight in the rectum. Eighteen months ago she first noticed a discharge of blood and mucus from the bowel. During the past year she had lost flesh rapidly, having formerly been very stout. She had been for some months in a London hospital, but obtained no relief. Her sufferings were considerable; she had lost control over the sphincter, the fæces escaping without her knowledge. Upon examination, the parts were found to be very tender, with a growth extending almost to the margin of the anus, about which the skin was œdematous and excoriated. A considerable mass of disease occupied the lower three inches of the bowel, taking the form of a large irregular ulceration with a hard base and fungating margins. At one point the disease extended somewhat higher than three inches. The recto-vaginal septum was implicated, but the mucous membrane on the vaginal aspect appeared sound.

Considering the length of time that the disease had existed, and the extent to which it had encroached on the anterior wall of the rectum, it did not seem a very favourable case for operation. The patient, however, was exceedingly anxious to have an attempt made to remove it, having been recommended to consult me for that purpose by my friend, Mr. Macready. The operation was performed in the usual manner. There was no difficulty in detaching the bowel from its posterior and lateral connections, but it required some time and caution to dissect through the recto-vaginal septum; this was done by keeping as near as possible to the mucous lining of the vagina; but even at the time there appeared a suspicion that the disease at this part had not been thoroughly removed. Whilst detaching the upper anterior part of the rectum, the peritoneal membrane was distinctly seen. The diseased bowel being drawn down was cut across by a wire écraseur a little more than three inches from the anus. Upon detaching the portion, a small coil of intestine was seen in the upper part of the wound, but it was not known at what period of the operation the peritoneal membrane had been opened. The knuckle of bowel was gently pressed up by the finger and disappeared. The wound was treated in the ordinary way, without any dressing or sutures, and kept thoroughly free from all discharge by frequent syringing with warm carbolic lotion.

The patient never had a symptom of peritonitis, recovered quickly, and left the hospital at the end of the month free from all pain, and much stronger and more comfortable than she had been for a long time; she had no pain on passing her motions, over which she had a fair amount of control. She appeared well and comfortable for three months;

she then complained of some irritation about the part, and upon examination a soft fungating nodule could be felt springing from the anterior wall of the rectum. She suffered little pain. A month later, the disease had greatly increased, forming a considerable fungoid mass, blocking up the lower end of the rectum, causing some difficulty in passing her motions. It did not seem advisable to make any further attempt by a cutting operation; but, acting as other surgeons have done in these circumstances, as far as I could with the finger-nail and a blunt gouge, I scraped away the cauliflower growth down to its hard base. There was not much bleeding during this proceeding, and it gave her great relief, and she was enabled to pass her motions with comparative ease. The growth rapidly returned, the patient dying a few months later.

Case 99.—Mr. ——, a tall, fine man, born in Lincolnshire and living many years in London, and with no family history of cancer, sought advice under the following circumstances. Fifteen years ago he suffered considerable pain in the lower part of the rectum; this was followed, two months later, by an abscess in the ischio-rectal fossa. The abscess was allowed to break by itself, and for two years he had much trouble owing to its leaving a fistulous tract. This eventually healed, and he was quite well for thirteen years. For the last eight months he had suffered considerable pain in the lower part of the bowel. This increased to such an extent as to cause him sleepless nights, and he was unable to sit down without pain. He also suffered much distress by fancying his bowels had never been completely relieved. Upon examination, about an inch within the rectum, and midway between the posterior and lateral wall of the right side, that is, in the site of the old fistula track, was a hard nodule the size of a pigeon's egg. The mucous membrane was quite sound and healthy, but did not move very freely over the lump. He had had no discharge of blood or pus from the bowel, but after walking would notice a certain amount of sticky mucus on his linen. The anal margin was not excoriated, and looked quite healthy.

This lump was removed by means of the écraseur and cautery. The patient made a tedious convalescence, but could walk about at the end of two months, and three months after the operation regained to a considerable extent his previous health. Upon section, the tumour was seen to be composed of a quantity of cysts, two or three of which were as large as peas, but the greater portion much smaller, not larger than a pin's head. The cysts were held together in the meshes of a firm fibrous tissue, and they contained a thick, transparent, mucoid fluid. From its naked-eye appearances it was judged not to be malignant, and thought unlikely to return. However, it turned out otherwise. Four months after the operation the patient began once more to experience uneasiness about the part. This did not amount to pain at first, but after a while he experienced considerable pain, and he was again troubled with tenesmus. In December 1878, rather more than a year after the operation, the disease had returned. Upon examining the patient, a firm, hard nodule, nearly as large as the original one removed, could be felt in the site of the old scar, while a suspicious hardness extended under the mucous membrane for a short distance from this spot. The patient was anxious for a second operation, and seeing the disease was still limited, I undertook its removal. This was done entirely with a knife by cutting out the old cicatrix, together with the growth and a portion of the surrounding mucous membrane. The part removed was well within the sphincter, and extended upwards a couple of inches. There was no bleeding of any importance. By using the knife entirely and discarding the écraseur, the operation took a quarter the time it would have occupied had the latter instrument been used. No sutures or dressings of any kind were employed. He quickly convalesced, and returned home three weeks after the operation. He had no control over the fæces for the first three weeks, but at the end of six weeks the power completely returned. The growth when removed closely resembled that taken away on the first occasion, the proportion of fibrous tissue was increased, while the number and size of the cysts was smaller.

The growth again returned a year later as a small nodule by the side of the cicatrix, which was excised. In the winter of 1882 the disease again commenced to grow rapidly, spreading as an epithelioma along the buttocks, and the patient died in March of that year.

Case 100.—Miss D., a single lady, living partly in London and partly in the country, had always enjoyed good health until towards the end of 1879. She then for the first time noticed a slight amount of blood in the motions, and suffered considerable pain at times. She was treated for some time as suffering from piles, but grew worse, the pain increasing, and there was a profuse discharge of matter. In July 1880 she consulted Dr. Matthews Duncan, who, recognizing the nature of her illness, advised her to consult me.

At this time she had lost flesh considerably, and had a sallow complexion. The pain had become much worse lately, and she was tormented with a frequent desire to pass a motion, which generally resulted in some blood-stained discharge. Upon examination, the anus outside appeared normal, but a hardness could be felt in the left ischio-rectal fossa, and pressure on this spot was painful.

By drawing the sides of the anus apart, a small portion of growth could be seen protruding from the bowel on the left side. Upon introducing the finger into the anus, there was found to be a hard mass occupying the left side of the rectum, and apparently filling the ischio-rectal fossa.

On the surface of the tumour, towards the rectum, was a deep crater-like depression ; the growth at the margin of the depression was somewhat raised above the mucous membrane. The upper border of the growth was two and a half inches from the anus, and it occupied about one-half the circumference of the bowel.

July 28, 1880.—The patient being put in the lithotomy position, and ether being administered by Mr. Mills, with the assistance of Mr. Butlin I performed the following operation. I divided the bowel back to the coccyx, keeping a little to the right of the middle line. I then made a semicircular incision, just at the junction of the mucous membrane with the skin round the left side, to half an inch beyond the middle line of the anterior surface of the bowel. As usual in these cases, the separation of the bowel and tumour from the ischio-rectal fossa was easily accomplished by the finger assisted by a few snips with the scissors. Careful dissection was required to separate the anterior surface of the bowel from the posterior wall of the vagina. After carrying this dissection well across the middle line, I divided the bowel with scissors by a longitudinal incision three inches in length. By this means a portion of the rectum involving two-thirds of its circumference, in which was included the morbid growth, was isolated from all its connections, forming a flap connected only by its upper border. The mass was then forcibly drawn downwards, a loop of a wire écraseur passed over it, and the section of the upper border cut through by this means at a height of three inches. The portion thus removed was rectangular in shape, three inches long. When spread out, there was from a quarter to half an inch of the healthy mucous membrane all round the growth. The disease itself had extended into the ischio-rectal fossa to the depth of three-fourths of an inch. The growth towards the bowel was deeply ulcerated in the centre. At the margins the growth appeared to be insinuating itself between the muscular and mucous coats, lifting up the latter, so as to form a ring-like elevation. From the lower border were two fungating masses. Beneath the microscope the specimen proved to be a beautiful example of adenoid cancer. The patient convalesced without a single bad symptom, her only trouble being her inability to pass water for ten days. By August 18 she was sufficiently convalescent to go to Bournemouth, but had only slight control over the motions.

The following notes complete the case:—

Oct. 30, 1880.—The wound has perfectly healed, and she has little or no trouble as regards retention. There is no sign of any return of the disease, but there is a tendency to contraction of the anal orifice. She was at once advised to pass a full-sized bougie daily.

April 1882.—I examined the patient, and there was no sign of any return of the disease. The part all feels perfectly supple and normal, and there is scarcely any contraction, and she feels perfectly strong and well, and has become quite stout.

Sept. 26, 1883, I received the following letter:—

"MY DEAR SIR,—I am very thankful to say, in reply to your inquiry, that I am still perfectly free from any appearance of cancer. There is no pain whatever in any part, and no weakness. Indeed, nothing at all that I could in any way complain of. The contraction is not sufficient to necessitate the use of the instrument you furnished me with, and I have discontinued its use for nearly a twelvemonth. My general health is as good as ever. I always feel deeply indebted for the relief that I have experienced."

1884.—The patient is still well.

CHAPTER XV.

CONGENITAL COCCYGEAL TUMOUR — TUMOUR OF SACRUM—NÆVUS OF RECTUM—CONDYLOMATA OF ANUS—PAPILLOMA OF ANUS.

THE coccygeal region is occasionally the seat of a peculiar congenital tumour. In the various London Museums are several specimens of these growths. The tumours sometimes appear beneath the skin external to the coccyx, or they are situated in the lower part of the pelvis between the rectum in front and the coccyx and sacrum behind.

Case 101.—In the Royal College of Surgeons[1] is a fine example of such a tumour. It was presented by Mr. Mason, and is thus described in the catalogue. "The pelvic cavity is filled with a soft encapsulated tumour, the outer surface of which is yellowish, and shows small cystic cavities. The pelvic viscera are displaced upwards and forwards. After microscopic examination, the tumour was considered to be a lymphadenoma.

"From a female infant, 16 months old. The disease was first detected six weeks before death, when the patient was constipated, with considerable protrusion of the anus. Obstruction of the bowels and retention of the urine frequently recurred and passed off. The temperature rose to 104°, and the

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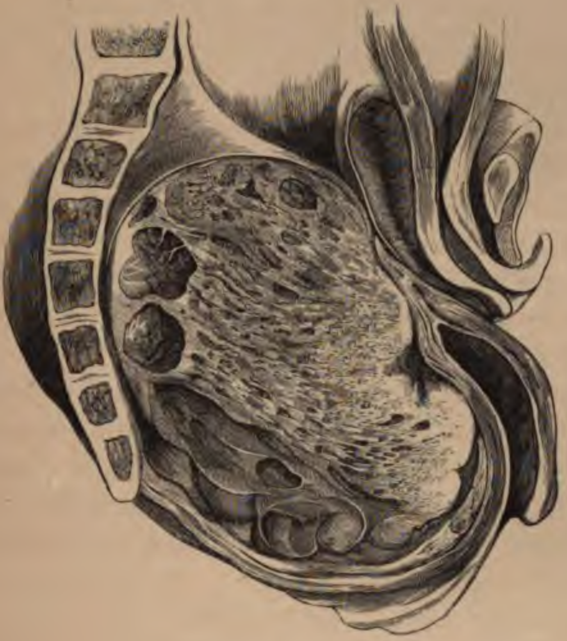
[1] Specimen No. 414.

Fig. 22.



COCCYGEAL TUMOUR.

The tumour can be seen growing between the rectum in front and the sacrum and coccyx behind. The pelvic viscera are displaced upwards. —Drawn from a specimen in the Royal College of Surgeons' Museum.

To face page 416.

patient died with vomiting, dyspnœa, and great distension of the abdomen. One of the patient's sisters, aged nine, had a congenital cystic tumour, situated in the posterior part of the sacrum and coccyx." (See woodcut.)

Case 102.—Mr. Treves at the Pathological Society,[1] showed a specimen of congenital tumour he had removed from the coccygeal region.

In this case, "the tumour was external, covered by a purplish skin, and attached to sacro-coccygeal region by a broad pedicle. The mass was covered by a scalp-like integument, and at one part there was long hair, similar to that on the infant's head. At the posterior extremity of the tumour was a transverse crease that separated it from a mass of much smaller dimensions. About the situation of this fissure, on the right side, were five nipple-like processes of flabby, hairy skin, resembling rudimentary digits, while in a corresponding position, on the left side, was a raised granulating surface. Below the digits was a pendulous, claret-coloured mass, presenting longitudinal folds exactly resembling prolapsed gut.

"The mass was readily removed with the knife. It was found to be attached to the posterior surface of the coccyx and lower half of the sacrum. These bones were perfectly normal, and showed neither defect nor displacement. One artery alone required ligature, and that issued from the substance of the sacrum and entered the lower part of the pedicle. An examination per rectum showed the anterior aspects of the bones to be quite normal, and demonstrated the absence of any deep connection with the tumour. The wound healed well and entirely. The child had to be brought up by hand. It became ill-nourished, and vomited the greater part of the milk it took. It was much troubled by diarrhœa, and died of inanition seven days after the operation."

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[1] Path. Soc. Trans., vol. xxxiii. p. 285.

Mr. Treves, after dissection and microscopic examination, found that the tumour in this case consisted largely of fœtal remains, and concluded that it was an instance of attached fœtus, and further believes that many of the congenital tumours found in this neighbourhood have a similar origin.

Case 103.—*Large Tumour partly Occluding the Rectum by Pressure.*—W. H. was admitted under my care into the Hospital[1] in Nov. 1882. Seven years previously the patient commenced to suffer from pain in the region of the sacrum. He was treated at the County Infirmary, and was told that he was suffering from ulcer of the rectum. He, however, received no benefit. He fell into the habit of taking large doses of morphia, and for a time was said to have been out of his mind and lost the use of his legs. Five years ago he came up to St. George's Hospital, and after a fortnight he was discharged as incurable, being told that he was suffering from rectal cancer. He was then admitted into the Brompton Cancer Hospital, from whence he was again discharged as incurable. Three years ago he began to suffer from incontinence of urine and fæces, but at the same time completely regained the use of his legs. On admission into the hospital, the patient was a thin, highly nervous man, and when speaking kept up a constant spasmodic movement of the head and arms. He had complete incontinence of urine and fæces, and could not tell when either were passing. On digital examination of the rectum, a hard elongated swelling could be felt commencing about two inches above the anus, and extending upwards beyond the reach of the finger. The tumour was situated altogether behind and to the right side of the rectum, but by pressing upon the posterior wall, it greatly diminished the calibre of the bowel. The tumour appeared to spring from some part of the anterior surface of the sacrum, and from what could be felt of it was estimated to be about the size of a fœtal head. Towards the middle line it was almost of a bony hardness, but at the margin its consistency was softer. The tumour was growing rapidly, for the patient had been carefully examined three months previously and there was some doubt as to the existence of a tumour. A small trocar was driven into the hardest portion of the tumour, with a view to ascertaining its nature, which proved not to be bony. In consultation, the majority of my colleagues considered the growth to be of a cartilaginous or malignant nature, and that any operation for its removal was quite impracticable.

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[1] St. Bartholomew's Hospital.

Nævus of the Rectum.—Two cases of this rare condition were brought before the Medical Chirurgical Society in April 1883.[1] One case (104) referred to by Mr. H. Marsh, was that of a girl aged 10, who had suffered repeatedly from severe hæmorrhage from the rectum. Upon examination under chloroform, with the aid of a speculum, a nævoid growth was seen in the lower part of the rectum completely surrounding the bowel. This was treated by several applications of Paquelin's cautery, which relieved the symptoms but did not cure the growth.

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[1] Lancet, 1883, vol. i. p. 637.

The other case (105) was under the care of Mr. E. T. Barker. The patient, whose earliest symptom was an attack of diarrhœa accompanied by great loss of blood, usually suffered from constipation, and was obliged to strain much during defecation. Sometimes, however, he had intervals of diarrhœa, always with great loss of blood, and felt no pain and lost no flesh, and there was no particular discharge from the rectum except during the attacks of bleeding. A diagnosis of the condition was made by a large speculum with a powerful artificial light; by this means the mucous membrane of the bowel was seen to be marked by smooth longitudinal folds, mottled with a peculiar purplish tint. On these folds were three shallow ulcers, whence the blood flowed freely. The patient gradually sank and died from loss of blood. The post-mortem examination showed the walls of the rectum to be much thickened in the lower four and a half inches by nævoid growth in its walls, on the rugæ of which were the ulcers already described.

Condylomata of Anus.—This is extremely common, and is generally, though not necessarily, a syphilitic affection. The patches vary in size from a sixpenny-bit to a five-shilling-piece or larger. They are often symmetrical, there being corresponding patches on opposite sides. The patches are raised slightly above the level of the surrounding skin. They have a coarse granular surface, with a pink or whitish appearance, and are moist, being bathed with a thin fetid secretion. They are easily cured by local treatment, though, if of a syphilitic origin, the ordinary constitutional remedies must be administered. The essential part of the local treatment is that the patches should be kept clean and dry. With this object, the part should be thoroughly washed twice a day, and then well bathed with boracic acid lotion, twenty grains to the ounce. The patches must then be thoroughly dried with a soft pocket-handkerchief, and the following powder freely dusted over the surface :—

Pulv. hydrarg. subchlor., gr. xx.
Pulv. iodoformi, gr. xx.
Pulv. zinci oxidi, ʒj.
Pulv. amyli, ℥ss.
To be well mixed.

It is important, on each application of powder, that what remains of the old dusting should be washed off.

Papilloma about the Anus.—Occasionally a papillomatous growth springs from the thin skin around the anal margin, and sometimes these may be traced to the irritation of gonorrhœal or syphilitic discharge, and appear to be an exaggerated form of the condylomatous patches so common in this locality ; but they can undoubtedly originate without any such source of irritation.

Case 106.—A girl, aged 13, who had never menstruated, and in whom the hymen was intact, was admitted into St. Bartholomew's.[1] Around the anal margin, and forming a complete ring, was a mass of warts, the size of a small orange. There was very little discharge from their surface, nor did they cause any pain. The tumour was removed by the scissors and cautery. In this case there was not the slightest reason for supposing that the growth was due either to syphilis or gonorrhœa.

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[1] Sitwell Ward Register, vol. vi. p. 250. (Notes by author.)

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